Vol. 996 Number 2

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July 8, 1980

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 8, 1980 Volume 996 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys or agents will be held on Tuesday, October 7, 1980.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trade mark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

37 C.F.R. 1.341(f) provides, in pertinent part, "Officers and employees of the United States who are disqualified by statute (18 U.S.C. 203, 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, may not be registered, * * * but officers or employees whose official duties require the preparation and prosecution of applications for patent may be registered (on compliance with the regulations in this part) or recognized to practice, to the extent necessary to carry out their official duties." If you are an officer or employee of the United States, your application for registration *must* be accompanied by your supervisor's *verified statement* that your official duties as a United States officer or employee require that you prepare and prosecute applications for patent.

The examination will be given under the supervision of the Office of Personnel Management (formerly Civil Service Commission), and may be taken in any of the cities in which the Office of Personnel Management regularly conducts examinations. Applications to take the examination must be filed in the Patent and Trademark Office together with a $35 fee not later than July 31, 1980.

Application blanks may be obtained from the Clerk of the Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
June 4, 1980. *Chairman, Committee on Enrollment.*

Patent Suits

Notices under 35 USC 290; Patent Act of 1952

2,995,017, James H. Breeding, APPARATUS FOR MAKING SUNDERED ICE, **filed** Feb. 27, 1979, D.C., E.D. Tex. (Sherman), Doc. 8–79–23–CA, *James H. Breeding* v. *Turbo Refrigerating Co.* Case dismissed with prejudice with right of plaintiff to re-file same and costs herein taxed against plaintiff. Filed May 12, 1980.

3,113,492, Orlando W. Foss, METHOD FOR MAKING A CARDBOARD BOX, **filed** May 5, 1980, D.C., M.D. Fla. (Jacksonville), Doc. 80–402–C–J–B, *Orlando W. Foss, Sr.* v. *Peninsular Boxboard Products, Inc.*

3,128,408, Goodrich and Wiley, ELECTRON MULTIPLIER, **filed** Apr. 28, 1980, D.C.N.J. (Trenton), Doc. 80–1215, *Galileo Electro-Optics Corp.* v. *Murata Mfg. Co., Ltd. et al.*

3,324,516, Dutt and Kelleher, COMPOSITE SEAM MEMBER; **4,006,760,** Romanski and Stevens, FABRIC CONNECTOR SEAM, **filed** May 9, 1980, D.C.N.J. (Trenton), Doc. 80–1365, *Albany International Corporation* v. *William Kenyon & Sons, Inc.*

3,336,604, Robert A. O'Connell, AIR CURTAIN TYPE INSECT TRAP, **filed** Apr. 7, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c1687, *Texas Western Financial Corporation* v. *Dimensions Unlimited, Inc. et al.* **Same, filed** Apr. 8, 1980, D.C., N.D. Tex. (Dallas), Doc. CA–3–80–0424G, *Texas Western Financial Corporation* v. *Cotter & Company.* **Same, filed** Apr. 8, 1980, D.C., N.D. Tex. (Dallas), Doc. CA–3–80–0425–F, *Texas Western Financial Corporation et al.* v. *Gulf Oil Corporation.*

3,416,637, Societe Anonyme Francaise Du Ferodo, RADIALLY MOVABLE CLUTCH BEARING, **filed** May 5, 1980, D.C., E.D.N.Y. (Brooklyn), Doc. CV–80–1240, *Societe Anonyme Francaise Du Ferodo* v. *Federal Mogul Corporation.*

3,426,298, Adams-Russel Co., BROADBAND DIRECTIONAL COUPLER, **filed** Apr. 11, 1980, D.C.N.J. (Newark), Doc. 80–990, *Merrimac Industries, Inc.* v. *Adams-Russell Co., Inc.*

3,437,715, PPG Industries, Inc., RESIN COMPOSITION **3,846,618,** same, **filed** Apr. 16, 1976, D.C., N.D. Ohio (Cleveland), Doc. C–76–384, *PPG Industries, Inc.* v. *The Standard Oil Co. et al.* Complaint dismissed with prejudice at plaintiff's costs. Further ordered that defendant's are entitled to declaratory judgment on counterclaim that all 15 claims of patents in suit are invalid under 35 U.S.C. 102(a)(b) and (g) and 103. Filed Apr. 30, 1980.

3,500,992, Ralph L. Taber et al., TRANSFER SYSTEM, **filed** Apr. 4, 1980, D.C., E.D. Mich. (Detroit), Doc. 80–71354, *MGA, Inc.* v. *Ralph L. Tabor.*

3,524,680, Letcher T. White, MINING MACHINE HAVING SPIRAL CUTTERS WITH SCAVENGER BOARD, **filed** May 5, 1980, D.C., E.D. Ky. (Lexington), Doc. 80–72, *Letcher T. White* v. *Jeffrey Mining Machinery Co. et al.*

3,661,144, Jensen and Jensen, SUCTION APPARATUS FOR BODY CAVITIES, **filed** June 6, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c2253, *A/S Ferrosan* v. *Milex Products, Inc. et al.* All claims in complaint and counterclaim dismissed without prejudice pursuant to stipulated order of dismissal filed May 2, 1980.

3,706,414, Herman K. Dupre, APPARATUS FOR MAKING SNOW; **3,822,825,** same, SNOW MAKING APPARATUS AND SYSTEM; **3,952,949,** same, METHOD OF MAKING SNOW, **filed** Sept. 28, 1979, D.C., N.D.N.Y. (Utica), Doc. 79–CV–636, *Herman K. Dupre* v. *Shumaker Mountain Corporation.* Stipulation and order for dismissal filed on Apr. 17, 1980.

3,738,682, Orville A. Ritter, CLOSE COUPLED PULLING HITCH ASSEMBLY, **filed** Sept. 18, 1979, D.C. Kans. (Wichita), Doc. 79–1501, *B/J Manufacturing Co., Inc.* v. *Orville A. Ritter.* Final consent judgment filed May 7, 1980.

3,744,222, Alexander Delao, CORRUGATED BOARD PAINT FILTER, **filed** Mar. 20, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80–1101–DWW, *Florence Filter Corporation* v. *Commercial Supply Company.*

3,822,825. (See 3,706,414.)

3,840,618. (See 3,437,715.)

3,890,655, Cleo D. Mathis, WHIRLPOOL JET FOR BATHTUBS; **3,890,656,** same; **3,946,449,** same, **filed** Apr. 9, 1980, D.C. C.D. Calif. (Los Angeles), Doc. 80–01389, *Cleo D. Mathis* v. *Hydro Air Industries, Inc. et al.*

3,890,656. (See 3,890,655.)

3,915,777, Benjamin B. Kaplan, METHOD OF APPLYING FIRE-RETARDANT COATING MATERIALS TO A SUBSTRATE HAVING CORNERS OR OTHER SHARP EDGES, filed May 1, 1979, D.C., E.D. Mo. (St. Louis), Doc. 79-0502C(2), *Stan Chem, Inc.* v. *TSI, Inc.* Stipulated dismissal filed May 8, 1980.

3,946,449. (See 3,890,655.)

3,948,556, Stollee of California, CHILD'S CAR SEAT, filed Feb. 7, 1980, D.C., E.D. Mo. (St. Louis), Doc. 80-183C(2), *Welsh Company* v. *California Strolee, Inc., doing business as Strollee of California.* Notice of dismissal filed May 6, 1980.

3,952,949. (See 3,706,414.)

3,995,102, Raceway Components, Inc., INSERT DEVICE FOR CABLES, filed Dec. 20, 1979, D.C.N.J. (Newark), Doc. 79-3610, *Raceway Components, Inc.* v. *Square D. Company, Inc.* Order of dismissal filed Apr. 30, 1980.

4,006,760. (See 3,324,516.)

4,072,401, SGL Industries, Inc., MOUNTING ARRANGEMENT FOR CASED ELECTRICAL COMPONENTS, filed July 23, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c3039, *SGL Industries, Inc.* v. *Antronic Corp.* Case dismissed with leave to reinstate on Mar. 21, 1980.

4,115,082, Newtron Co. (Ancaster) Ltd. (AIR CLEANER ASSEMBLY), filed Apr. 30, 1980, D.C., E.D. Mich. (Detroit), Doc. 80-71699, *Newtron Co. (Ancaster) Ltd.* v. *Newtron Products Co. et al.*

4,152,250, Clevepak Corporation, BACKFLUSHING METHOD, filed May 5, 1980, D.C. Del. (Wilmington), Doc. 80-218, *Clevepak Corporation* v. *Houdaille Industries, Inc.*

4,179,299, The Carborundum Company, SINTERED ALPHA SILICON CARBIDE CERAMIC BODY HAVING EQUIAXED MICROSTRUCTURE, filed May 2, 1980, D.C., S.D. Calif. (San Diego), Doc. 80-0516-GT(M), *The Carborundum Company* v. *Kyocera International, Inc. et al.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

Re. 30,032, Re. S.N. 141,912, Filed Apr. 21, 1980, Cl. 260/45.75 S, CARBOFUNCTIONAL SULFUR AND CARBOXYLATE BRIDGED TIN COMPOUNDS, Thomas G. Kugele, et al., Owner of Record: *Cincinnati Milacron Chemicals, Inc., Reading, Ohio,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 143

4,064,900, Re. S.N. 073,697, Filed Sep. 10, 1979, Cl. 137/315, NON-RISE FAUCET ASSEMBLY, William C. Schmitt, Owner of Record: *Milwaukee Faucets, Inc., Milwaukee, Wis.,* Attorney or Agent: Nathan N. Kraus, et al., Ex. Gp.: 341

4,088,424, Re. S.N. 145,667, Filed May 1, 1980, Cl. 417/368, WET PICK-UP VACUUM UNIT MOTOR BEARING AIR SEAL, Robert L. Hyatt, et al., Owner of Record: *Ametek, Incorporated, Kent, Ohio,* Attorney or Agent: Albert L. Ely, Jr., Ex. Gp.: 343

4,100,960, Re. S.N. 146,627, Filed Apr. 5, 1980, Cl. 164/119, METHOD AND APPARATUS FOR CASTING METALS, Leonard Watts, Owner of Record: *Technicon Instruments Corporation, Tarrytown, N.Y.,* Attorney or Agent: Roland T. Bryan, et al., Ex. Gp.: 324

4,117,184, Re. S.N. 132,928, Filed Mar. 24, 1980, Cl. 228/224, ABSORBENT FILMS AND LAMINATES, Robert E. Erickson, et al., Owner of Record: *The Dow Chemical Company, Midland, Mich.,* Attorney or Agent: Richard G. Waterman, Ex. Gp.: 164

4,133,324, Re. S.N. 145,666, Filed May 1, 1980, Cl. 123/117 A, IGNITION TIMING CONTROL FOR ENGINE, Toru Yagi, et al., Owner of Record: *Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: John B. Young, et al., Ex. Gp.: 342

4,136,488, Re. S.N. 144,111, Filed Apr. 28, 1980, Cl. 51/58, HONING MACHINE, William G. Wunder, Owner of Record: *Ex-Cell-O Corporation, Troy, Mich.,* Attorney or Agent: Frank D. Risko, Ex. Gp.: 323

4,139,873, Re. S.N. 145,937, Filed May 2, 1980, Cl. 360/85, METHOD AND APPARATUS FOR VIDEO SIGNAL RECORDING, Alexander R. Maxey, Owner of Record: *Arvin Industries, Inc., Columbus, Ind.,* Attorney or Agent: Nathaniel R. French, et al., Ex. Gp.: 235

4,143,084, Re. S.N. 143,397, Filed Apr. 4, 1980, Cl. 585/24, DI-ALKYLBENZENE ISOMER MIXTURES, Warren W. Kaeding, et al., Owner of Record: *Mobil Oil Corporation, New York, N.Y.,* Attorney or Agent: Charles A. Huggett, et al., Ex. Gp.: 116

4,143,452, Re. S.N. 133,541, Filed Mar. 24, 1980, Cl. 29/434, PACIFIER METHOD OF CONSTRUCTION, Louise Z. Hakim, Owner of Record: *Inventor,* Attorney or Agent: Ezra Sutton, Ex. Gp.: 321

4,146,856, Re. S.N. 138,373, Filed Apr. 7, 1980, Cl. 335/151, SHUTTERLESS FIBER OPTIC SWITCH, James R. Jaeschke, Owner of Record: *Eaton Corporation, Cleveland, Ohio,* Attorney or Agent: Robert J. McCloskey, et al., Ex. Gp.: 212

4,147,836, Re. S.N. 104,553, Filed Jan. 8, 1980, Cl. 428/481, POLYESTER COATED PAPERBOARD FOR FORMING FOOD CONTAINERS AND PROCESS FOR PRODUCING THE SAME, Scott William Middleton, et al., Owner of Record: *American Can Company, Greenwich, Conn.,* Attorney or Agent: Robert P. Auber, et al., Ex. Gp.: 164

4,147,836, Re. S.N. 104,554, Filed Jan. 8, 1980, Cl. 428/481, POLYESTER COATED PAPERBOARD FOR FORMING FOOD CONTAINERS AND PROCESS FOR PRODUCING THE SAME, Scott William Middleton, et al., Owner of Record: *American Can Company, Greenwich, Conn.,* Attorney or Agent: Robert P. Auber, et al., Ex. Gp.: 164

4,158,953, Re. S.N. 139,006, Filed Apr. 10, 1980, Cl. 70/164, FRONT ENTRY ELECTRIC METER LOCK, Anker J. Nielsen, Jr., Owner of Record: *Inventor,* Attorney or Agent: Robert K. Randall, Ex. Gp.: 355

4,166,179, Re. S.N. 146,146, Filed May 2, 1980, Cl. 544/296, MANUFACTURE OF ORGANIC PIGMENTS, Wolfgang Lotsch, Owner of Record: *BASF Aktiengesellschaft, Rheinland-Pfalz, Germany,* Attorney or Agent: Herbert B. Keil, et al., Ex. Gp.: 122

4,180,125, Re. S.N. 145,953, Filed May 2, 1980, Cl. 165/48 R, APPARATUS FOR SELECTIVELY HEATING AN INDIVIDUAL FOOD ITEM IN A REFRIGERATED ENVIRONMENT, William J. Schulz, et al., Owner of Record: *UOP Inc., Des Plaines, Ill.,* Attorney or Agent: James R. Hoatson, Jr., et al., Ex. Gp.: 345

4,186,113, Re. S.N. 146,982, Filed May 5, 1980, Cl. 252/526, LOW IRRITATING DETERGENT COMPOSITIONS, Robert Joseph Verdicchio, et al., Owner of Record: *Johnson & Johnson, New Brunswick, N.J.,* Attorney or Agent: Leonard P. Prusak, et al., Ex. Gp.: 166

PATENT NOTICES

Certificates of Correction for the Week of July 8, 1980

Re. 29,162	4,172,779	4,185,368	4,192,184
D. 252,049	4,172,978	4,185,405	4,192,359
D. 253,540	4,173,495	4,185,415	4,192,432
4,005,231	4,174,372	4,185,741	4,192,525
4,044,986	4,174,803	4,186,286	4,192,542
4,059,844	4,176,313	4,186,471	4,192,688
4,068,555	4,176,395	4,186,851	4,192,996
4,076,685	4,176,672	4,187,350	4,193,195
4,096,820	4,177,149	4,187,788	4,193,236
4,101,363	4,177,202	4,188,153	4,193,758
4,128,130	4,177,214	4,188,239	4,193,887
4,132,900	4,178,047	4,188,275	4,193,948
4,132,985	4,178,050	4,188,346	4,194,153
4,133,166	4,180,307	4,188,486	4,194,282
4,133,948	4,181,143	4,188,527	4,194,366
4,135,214	4,181,210	4,188,698	4,194,452
4,138,640	4,181,380	4,188,926	4,195,027
4,140,504	4,181,669	4,189,295	4,195,029
4,141,971	4,181,740	4,189,430	4,195,549
4,144,904	4,181,995	4,189,464	4,195,592
4,152,165	4,182,072	4,189,555	4,195,674
4,152,774	4,182,098	4,189,750	4,195,691
4,154,720	4,182,660	4,189,754	4,195,736
4,157,407	4,182,679	4,189,966	4,195,930
4,159,528	4,183,026	4,190,158	4,196,184
4,164,590	4,183,119	4,190,450	4,196,371
4,164,983	4,183,534	4,190,475	4,196,561
4,167,323	4,183,704	4,190,481	4,196,959
4,167,581	4,183,788	4,191,001	4,197,095
4,168,146	4,183,832	4,191,397	4,197,287
4,169,311	4,183,948	4,191,566	4,197,431
4,170,597	4,183,970	4,191,598	4,197,475
4,171,271	4,184,110	4,191,611	4,197,531
4,171,356	4,184,871	4,191,908	4,197,825
4,171,455	4,185,085	4,191,922	4,197,908
4,172,593	4,185,248	4,192,073	4,197,931

Dedication

3,852,396.—*Donald D. Phillips*, Westfield, N.J. and *Loyal F. Ward, Jr.*, deceased, late of San Jose, Calif., by Melba L. Ward, executrix. 2-CHLOROVINYL ETHYL ISOPROPYL PHOSPHORAMIDATE AND 2-CHLOROVINYL ETHYL DIETHYL PHOSPHORAMIDATE. Patent dated Dec. 3, 1974. Dedication filed May 14, 1980, by the assignee, *Shell Oil Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

4,058,694.—*Robert O. Tuegel*, St. Louis County, Mo. MASTER CYLINDER RESERVOIR WITH VACUUM RELIEF DIAPHRAGM AND GUARDED FLUID LEVEL SENSOR. Patent dated Nov. 15, 1977. Disclaimer filed Apr. 3, 1980, by the assignee, *Wagner Electric Corporation*.

Hereby enters this disclaimer to claims 3, 4, 8, 9 and 11 of said patent.

4,069,148.—*David Glenn Hutton*, Newark and *Francis Leonard Robertaccio*, Hockessin, Del. INDUSTRIAL WASTE WATER TREATMENT PROCESS. Patent dated Jan. 17, 1978. Disclaimer filed Apr. 9, 1980, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,174,484.—*Fritz Schmider*, Hornberg, Germany. MOTOR WITH A DISK ROTOR. Patent dated Nov. 13, 1979. Disclaimer filed May 5, 1980, by the assignee, *Papst Motoren KG*.

Hereby enters this disclaimer to claims 30 through 39 of said patent.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va., 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent application must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St. SW., Washington, D.C. 20324

Patent application 6-064,932. Aerial Refueling Receptacle Floodlights—Spoiler and Fuselage, Nose Mounted. Filed Aug. 8, 1979.

Patent application 6-068,822. Optical Multiplexer/Demultiplexer. Filed Aug. 22, 1979.

Patent application 6-069,476. Articulated Para-Ordered Aromatic Heterocyclic Polymers Containing Diphenoxybenzene Structures. Filed Aug. 24, 1979.

Patent application 6-070,454. Integrated Optical R-F Spectrum Analyzer. Filed Aug. 28, 1979.

Patent application 6-070,473. F-Phenylalkylene Oxide Diacetylenes. Filed Aug. 28, 1979.

Patent application 6-072,734. Laser Resistant Ceramic Composite. Filed Aug. 30, 1979.

Patent application 6-074,263. Method for Controlling the Resonance Frequency of Yttrium Iron Garnet Films. Filed Sept. 11, 1979.

Patent application 6-076,720. Self-Stressed Mode 1 Fracture Mechanics Test Piece. Filed Sept. 19, 1979.

Patent application 6-077,235. Hole Angularity Gage. Filed Sept. 19, 1979.

Patent 4,177,308. Non-Combustible High Temperature Abradable Seal Material. Filed Aug. 10, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,328. Wall Wick for Nickel-Hydrogen Cell. Filed Dec. 19, 1978. Patented Dec. 4 ,1979. Not available NTIS.

Patent 4,177,437. High Power Pre-TR Switch. Filed Jan. 20, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,464. Multiplexing of Multiple Loop Sidelobe Cancellers. Filed Nov. 13, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,465. Near-Range Personnel Beacon Locator Apparatus. Filed Oct. 6, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,493. High Voltage Antenna Protection System. Filed Dec. 29, 1977. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,681. Apparatus for Adjusting and Locking a Linear Actuator. Filed Apr. 6, 1978. Patented Dec. 11, 1979. Not available NTIS.

Patent 4,178,428. Thermally Stable Enyne Polysulfone Polymers. Filed Sept. 27, 1978. Patented Dec. 11, 1979. Not available NTIS.

Patent 4,179,086. Arm Restraint System. Filed July 20, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,179,190. Wide Band Adjustable Brewster Angle Polarizer. Filed Jan. 3, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,179,657. Anti-Jamming Communication System. Filed Aug. 28, 1958. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,179,799. Method of Molding a Double Cathode Having a Sensing Grid for a Porous Electrode Primary Battery. Filed Apr. 17, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,725. Grating Apparatus for Static Crossed Field Photomultipliers. Filed May 11, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,779. QPSK Demodulator With Two-Step Quadrupler and/or Time-Multiplexing Quadrupling. Filed Sept. 21, 1978. Patented Dec. 25, 1979. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administrative Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6–055,116. Novel Aroid Products. Filed July 5, 1979.

Patent application 6–080,734. Stickless Burley Tobacco Curing Frames. Filed Oct. 1, 1979.

Patent application 6–085,440. Automatic Hatchery Tray Dumper. Filed Oct. 16, 1979.

Patent application 6–088,673. Mechanical Buncher for Leafy Vegetables. Filed Oct. 26, 1979.

Patent application 6–094,539. Carcass Cleaning Unit. Filed Nov. 15, 1979.

Patent 3,577,711. Apparatus for Removing Entrained Particles From Gases. Filed June 2 ,1969. Patented May 4, 1971. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents Washington, D.C. 20545

Patent 4,103,310. Multiple-Image Oscilloscope Camera. Filed Jan. 27, 1977. Patented July 25, 1978. Not available NTIS.

Patent 4,143,131. Removal of Plutonium From Hepatic Tissue. Filed Mar. 29, 1974. Patented Mar. 6, 1979. Not available NTIS.

Patent 4,147,563. Method for Forming P-N Junctions and Solar-Cells by Laser-Beam Processing. Filed Aug. 9, 1978. Patented Apr. 3, 1979. Not available NTIS.

Patent 4,147,938. Fire Resistant Nuclear Fuel Cask. Filed Feb. 7, 1978. Patented Apr. 3, 1979. Not available NTIS.

Patent 4,148,134. Method for Forming a Thermocouple. Filed Oct. 12, 1977. Patented Apr. 10, 1979. Not available NTIS.

Patent 4,148,235. Coupling for Joining a Ball Nut to a Machine Tool Carriage. Filed Mar. 28, 1978. Patented Apr. 10, 1979. Not available NTIS.

Patent 4,149,931. Divertor for Use in Fusion Reactors. Filed July 16, 1973. Patented Apr. 17, 1979. Not available NTIS.

Patent 4,151,325. Titanium Nitride Thin Films for Minimizing Multipactoring. Filed Oct. 22, 1976. Patented Apr. 24, 1979. Not available NTIS.

Patent 4,151,419. Solids Irradiator. Filed Oct. 20, 1977. Patented Apr. 24, 1979. Not available NTIS.

Patent 4,151,773. Defect Scriber. Filed Apr. 28, 1978. Patented May 1, 1979. Not available NTIS.

Patent 4,151,873. Regenerator for Gas Turbine Engine. Filed Jan. 25, 1978. Patented May 1, 1979. Not available NTIS.

Patent 4,152,028. Expansible Apparatus for Removing the Surface Layer From a Concrete Object. Filed Feb. 24, 1978. Patented May 1, 1979. Not available NTIS.

Patent 4,152,175. Silicon Solar Cell Assembly. Filed July 24, 1978. Patented May 1, 1979. Not available NTIS.

Patent 4,152,178. Sintered Rare Earth-Iron Laves Phase Magnetostrictive Alloy Product and Preparation Thereof. Filed Jan. 24, 1978. Patented May 1, 1979. Not available NTIS.

Patent 4,152,647. Rapidly Deployable Emergency Communication System. Filed Feb. 23, 1978. Patented May 1, 1979. Not available NTIS .

Patent 4,153,370. Microinterferometer Transducer. Filed Dec. 5, 1977. Patented May 8, 1979. Not available NTIS.

Patent 4,154,868. Method for Forming Targets. Filed July 13, 1978. Patented May 15, 1979. Not available NTIS.

Patent 4,156,809. Data Acquisitor System. Filed Feb. 7, 1978. Patented May 29, 1979. Not available NTIS.

Patent 4,157,490. X- And Y-Axis Driver for Rotating Microspheres. Filed May 17, 1976. Patented June 5, 1979. Not available NTIS.

Patent 4,157,555. Superconducting Transistor. Filed Nov. 7, 1977. Patented June 5, 1979. Not available NTIS.

Patent 4,158,145. Combined Compressed Air Storage-Low Btu Coal Gasification Power Plant. Filed Oct. 20, 1977. Patented June 12, 1979. Not available NTIS.

Patent 4,158,176. Spatial Filter System as an Optical Relay Line. Filed Sept. 6, 1977. Patented June 12, 1979. Not available NTIS.

Patent 4,158,598. Parabolic Lithium Mirror for a Laser-Driven Hot Plasma Producing Device. Filed June 14, 1976. Patented June 19, 1979. Not available NTIS.

Patent 4,158,606. Austenitic Stainless Steel Alloys Having Improved Resistance to Fast Neutron-Induced Swelling. Filed Mar. 15, 1978. Patented June 19, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health, Chief, Patent Branch Westwood Bldg., Bethesda, Md. 20205

Patent 4,182,678. Micro-Scale Countercurrent Chromatograph. Filed Dec. 14, 1978. Patented Jan. 8, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th & C Sts. NW., Washington, D.C. 20240

Patent application 6–066,998. In-Situ Leach Mining Method and Apparatus. Filed Aug. 16, 1979.

Patent application 6–078,358. Automated Satellite Mapping System (MAPSAT). Filed Sept. 24, 1979.

Patent 4,173,141. Method of Determining Gas Leakage Through a Mine Stopping. Filed Nov. 28, 1978. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,180,177. Pressure Vent for Explosion-Proof Electrical Enclosures. Filed Apr. 4, 1979. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,180,352. Extensible Brattice and Cantilevered Roof Mounted Support System Therefor. Filed Nov. 7, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,181,588. Method of Recovering Lead Through the Direct Reduction of Lead Chloride by Aqueous Electrolysis. Filed Jan. 4, 1979. Patented Jan. 1, 1980. Not available NTIS.

Patent 4.185,199. Method of Continuously Determining Radiation Working Level Exposure. Filed June 29, 1978. Patented Jan. 22, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research Code 302, Arlington, Va. 22217

Patent 3,403,405. Telescoping Folded Monopole With Capacitance at Input. Filed June 8, 1965. Patented Sept. 24, 1968. Not available NTIS.

Patent 4,130,466. Antifouling Coating for Aluminum Structures. Filed May 31, 1978. Patented Dec. 19, 1978. Not available NTIS.

Patent 4,155,089. Notched/Diagonally Fed Twin Electric Microstrip Dipole Antennas. Filed Oct. 31, 1977. Patented May 15, 1979. Not available NTIS.

Patent 4,157,548. Offset Fed Twin Electric Microstrip Dipole Antennas. Filed Oct. 31, 1977. Patented June 5, 1979. Not available NTIS.

Patent 4,157,991. Corrosion Preventive Composition. Filed Apr. 10, 1978. Patented June 12, 1979. Not available NTIS.

Patent 4.166,729. Collector Plates for Electrostatic Precipitators. Filed July 26, 1977. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,167,735. Aircraft Orientation Determining Means. Filed Aug. 18, 1978. Patented Sept. 11, 1979. Not available NTIS.

Patent 4.172,630. Multimode Electrooptic Waveguide Switch. Filed Apr. 13, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4.173.384. Flexible Co-Axial Connector for Cable In-Line Electronics. Filed Aug. 23, 1978. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,174,524. Ultra High Speed Gated Pulse Optical Imaging System. Filed Sept. 25, 1978. Patented Nov. 13, 1979. Not available NTIS.

Patent 4.174.843. Self-Adjusting Tandem Seal. Filed June 8, 1978. Patented Nov. 20, 1979. Not available NTIS.

Patent 4.176,040. Coal Liquefaction. Filed May 8, 1978. Patented Nov. 27, 1979. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA Code GP–2, Washington, D.C. 20546

Patent application 6–072,727. Method of Making V-MOS Field Effect Transistors. Filed Sept. 5, 1979.

Patent application 6–072,857. Multiwall Thermal Protection System. Filed Sept. 5, 1979.

Patent application 6–073,477. Scanning Afocal Laser Velocimeter Projection Lens System. Filed Sept. 7, 1979.

Patent application 6–092,143. Method for Shaping and Aiming Narrow Beams. Filed Nov. 7, 1979.

Patent application 6–092,145. Modified Face Seal for Positive Film Stiffness. Filed Nov. 7, 1979.

Patent application 6–093,714. Schottky Barrier Solar Cell and Method of Fabrication. Filed Nov. 13, 1979.

Patent application 6–098,568. Low Temperature Latching Solenoid. Filed Nov. 29, 1979.

Patent application 6-102,003. Improved Refractory Coatings and Method of Producing the Same. Filed July 12, 1979.

Patent application 6-102,593. Surface Conforming Thermal/Pressure Seal. Filed Dec. 12, 1979.

Patent application 838,308. Simultaneous Muscle Force and Displacement Transducer. Filed Sept. 30, 1977.

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Patent application 972,252. Optical Gyroscope System. Filed Dec. 22, 1978.

Patent 4,094,775. Dialysis System. Filed Feb. 28, 1977. Patented June 13, 1978. Not available NTIS.

Patent 4,157,655. Coal-Shale Interface Detection System. Filed Nov. 3, 1977. Patented June 12, 1979. Not available NTIS.

Patent 4,157,718. Intra-Ocular Pressure Normalization Technique and Equipment. Filed Aug. 31, 1977. Patented June 12, 1979. Not available NTIS.

Patent 4,170,776. System for Real-Time Crustal Deformation Monitoring. Filed Dec. 21, 1977. Patented Oct. 9, 1979. Not available NTIS.

Patent 4,171,645. Displacement Probes With Self-Contained Exciting Medium. Filed July 26, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,172,228. Method for Analyzing Radiation Sensitivity of Integrated Circuits. Filed June 30, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,172,786. Ozonation of Cooling Tower Waters. Filed Sept. 29, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,173,820. Method for Forming a Solar Array Strip. Filed Mar. 29, 1978. Patented Nov. 13, 1979. Not available NTIS.

DEPARTMENT OF THE ARMY, OTJAG

Chief, Intellectual Property Division, Room 2D 444, Pentagon, Washington, D.C. 20310

Patent application 970,404. Non-Polluting Process for Desensitizing Explosives. Filed Dec. 18, 1978.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 17, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-18-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-3-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-25-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-1-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-31-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-2-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-25-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats, Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	4-2-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-23-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-16-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-21-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,088,114 to 3,091,767, inclusive
Plant Patents..... Numbers 2,228 to 2,261, inclusive

REISSUES

JULY 8, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

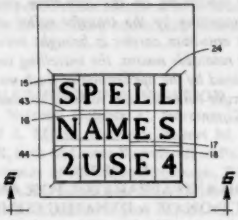
Re. 30,324
LETTER AND NUMBER KITS AND THE PROCESS OF PREPARING SAME

Joseph P. Seme, Walton Hills, Ohio, assignor to Sem-Torq, Inc., Bedford, Ohio

Original No. 3,626,616, dated Dec. 14, 1971, Ser. No. 870,495, Oct. 2, 1969. Application for reissue Mar. 31, 1978, Ser. No. 892,469

Int. Cl.[2] G09F *7/12*

U.S. Cl. 40—595 10 Claims



1. A kit for use in preparing signs including a plurality of thin *relatively rigid* metal plates of substantial uniform thickness, each having longitudinal and transverse upper and lower score lines arranged in opposed relation to each other and dividing each of the plates into a plurality of rectangularly-shaped segments, each of which segments have a blank face or have printed thereon a letter, numeral, or punctuation mark and in which the depth of each of the opposed upper and lower score lines are limited to such an extent that thin connecting links of metal extend between segments on each plate which links have sufficient strength to hold the segments together but which are thin enough so that individual segments may be snapped from the plate without forming burrs or rough edges.

Re. 30,325
METHOD AND APPARATUS FOR PRODUCING GLUED FOLDED BOXES

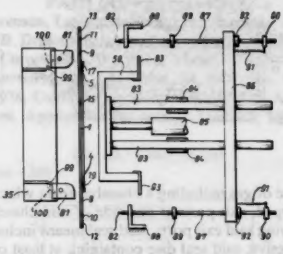
Wilhelm Waldbauer, deceased, late of Stuttgart, Fed. Rep. of Germany, assignor to Hoague-Sprague Leasing Company, Inc., Andover, Mass.

Original No. 3,459,105, dated Aug. 5, 1969, Ser. No. 648,841, Jun. 26, 1967. Application for reissue Jan. 8, 1979, Ser. No. 1,690

Int. Cl.[3] B31B *1/44, 9/26*

U.S. Cl. 93—51 M 20 Claims

1. In a method of molding a flat precut blank so as to form a glued folded open box or box cover having a flat bottom or top, respectively, two pairs of opposite side walls connected to said bottom or top *and one pair of said walls having vertically arranged end edges*, a pair of flaps adjoining the vertical edges at each end of *said* one of said pairs of side walls and bent at right angles thereto and extending toward each other into the plane of one of the side walls of the other pair covering said flaps, and a marginal strip adjoining the upper edge of each side wall of said other pair and folded over the upper edges of one pair of said flaps and bent inwardly so as to overlap said upper edges and connect said [flap] *flaps* to each other, wherein before said blank is shaped to form said box or box cover by means of a plunger pressing said blank against a female mold and into a folding recess therein, said marginal strips are coated with adhesive and are bent outwardly mechanically by means of deflectors projecting laterally over said plunger, and wherein after said plunger has been retracted



from said mold, said marginal strips are mechanically folded over and glued to the inwardly bent flaps by means of [members pivotably mounted on said plunger] members *pivotably mounted on said mold*.

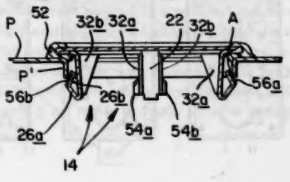
Re. 30,326
PANEL HOLE CLOSURE

Harold S. van Buren, Jr., Lincoln, Mass., assignor to TRW Inc., Cleveland, Ohio

Original No. 4,091,962, dated May 30, 1978, Ser. No. 817,461, Jul. 20, 1977. Application for reissue Jan. 5, 1979, Ser. No. 1,107

Int. Cl.[2] B65D *45/16*

U.S. Cl. 220—326 16 Claims



1. A panel hole closure comprising

A. a plate,

B. a plurality of flexible, resilient fingers projecting from one surface of the plate, said fingers being distributed about the center of the plate inboard of its rim,

C. means associated with each finger for stiffening said finger against inward deflection toward the axis of the plate, and

D. a sealing ring extending around the rim of the plate, said sealing ring being made of a plastic material which flows upon being subjected to a selected elevated temperature.

Re. 30,327

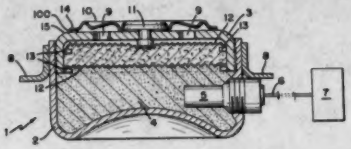
INFLATOR SEAL

William H. Damon, Huntsville, Ala., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Original No. 3,891,233, dated Jun. 24, 1975, Ser. No. 481,293, Jun. 20, 1974. Application for reissue Jun. 21, 1977, Ser. No. 808,489

Int. Cl.[2] B60R *21/10*

U.S. Cl. 280—740 23 Claims



1. A source of gas including a chamber from which inflating gas is developed, exit ports at one side of said chamber, a seal means overlying said exit ports, said seal means including a seal disc and adhesive, said seal disc containing at least one convolution, said seal disc attached to said source by said adhesive binding the outer extent of said seal disc to said source, said adhesive rupturing at a pressure lower than the pressure of the inflating gas exiting from said source, said gas directed by said seal disc on exiting from said exit ports to pass through said adhesive on rupture thereof, and said seal disc further attached to said source at a location separate from the area of adhesion to said source.

Re. 30,328

APPARATUS FOR DEVELOPING A TRAVELLING PHOTOGRAPHIC EMULSION CARRIER

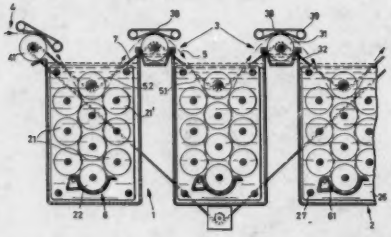
Heinrich Huss, Liebigstr. 1, 6051 Weiskirchen, Fed. Rep. of Germany

Original No. 4,034,389, dated Jul. 5, 1977, Ser. No. 615,794, Sep. 22, 1975. Application for reissue Aug. 14, 1978, Ser. No. 933,781

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1974, 2445503

Int. Cl.[2] G03D *3/08*

U.S. Cl. 354—322 14 Claims



1. An apparatus for developing a travelling photographic emulsion carrier, comprising at least two laterally spaced apart containers having upper edges and being adapted to accommodate baths of treating liquid, emulsion carrier guide means in the respective containers and each comprising a plurality of guide rollers for guiding the carrier in a loop-shaped path having a bight, and a deflecting roller for deflecting the carrier in said bight *in the the lower portion of said container*, all of said rollers being located downwardly of the respective upper edges *of said containers* so as to be at least partially immersed in the respective bath, said guide rollers and deflecting roller in each of said containers [being of identical diameters and] being arranged in three rows in the respective container; [a receptacle located intermediate said containers for accommodating a body of fresh water; and carrier transfer roller means at least partly immersed in the body of water and operative for engaging and transferring the carrier from one to the other of said containers] *a rinsing trough located intermediate laterally arrayed, in-line film treating containers and providing a transfer means for the emulsion carrier between film treating containers, this transfer means including a transfer roller in said trough and adapted to carry said emulsion carrier over the upper edges of the spaced apart containers and on top of this roller; a rinsing bath of fresh water carried in this trough and with the lower priphery of said transfer roller constantly dipped into and emerging from the water in the rinsing trough, and rotatable means carried above the transfer roller and providing means for engaging the travelling photographic emulsion carrier as it is transported on the upper surface of said transfer roller so that as the transfer roller is rotated any residual quantity of bath treating liquid from a preceding container remaining on the travelling emulsion carrier is removed by squeezing by the transfer roller and the rotatable means as this emulsion carrier is brought between the transfer roller and the rotatable means, the travelling emulsion carrier is constantly cleaned by the application of fresh water to the periphery of the transfer roller as said roller is rotated into the rinsing bath of fresh water.*

Re. 30,329

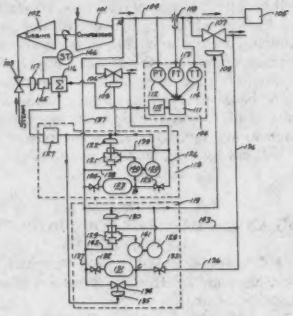
METHOD AND APPARATUS FOR ANTISURGE PROTECT:ON OF A DYNAMIC COMPRESSOR

Alexander Rutshtein, Oberlin, Ohio, and Naum Staroselsky, Des Moines, Iowa, assignors to Compressor Controls Corp., Des Moines, Iowa

Original No. 4,046,490, dated Sep. 6, 1977, Ser. No. 636,803, Dec. 1, 1975. Application for reissue May 31, 1978, Ser. No. 911,207

Int. Cl.[2] F04B *49/00;* F03B *15/00*

U.S. Cl. 415—1 5 Claims



1. A method of integrated antisurge control of a controlled object including a dynamic compressor having a discharge and a suction port, a driver for said compressor, a pipeline connecting the discharge port of the compressor to a user of compressed gas, a quick-acting on-off fluid relief means connected to said pipeline, and a control means for controlling a main controlled parameter, said parameter being one of (a) the mass flow rate of a gas to the user, (b) the discharge pressure of the compressor, (c) the suction pressure of the compressor and (d) the speed of rotation of the compressor, said method comprising:

measuring one of the [speed] *rate* of pressure drop in the discharge port of the compressor and the [speed] *rate* of flow drop [in the suction port of] *through* the compressor;

simultaneously operating two different means, one of said two means being said fluid relief means, the other of said

two means being a means operatively connected to the compressor for changing the flow rate of a gas through the compressor, said operation further comprising two simultaneous actions, one of the actions being the [full automatic] opening of the fluid relief means *to a pre-established position* when the rate of one of the pressure drop in the discharge port of the compressor and the flow drop [in the suction port of] *through* the compressor [and the flow drop in the suction port of the compressor] reaches a magnitude corresponding to the beginning of surge, the time of said [full] opening of the fluid relief means being chosen so as to prevent the developing of surge as indicated by said one of the [speed] *rate* of pressure drop in the discharge port of the compressor and the [speed] *rate* of flow drop [in the suction port of] *through* the compressor and the other of said actions being acting on the means for changing the flow rate through the compressor to compensate for the decrease of the flow rate to the user caused by the outflow of the compressed gas through the opened relief means so as to insure the invariability of one of said main controlled parameters.

Re. 30,330

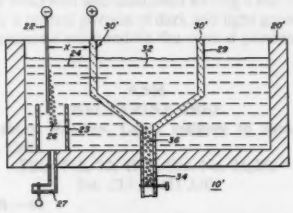
ALUMINUM PURIFICATION

Subodh K. Das, Natrona Heights; C. Norman Cochran, Oakmont; Richard A. Milito, Natrona; Robert M. Mazgaj, and Walter W. Hill, both of Lower Burrell, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Original No. 4,115,215, dated Sep. 19, 1978, Ser. No. 771,100, Feb. 23, 1977. Continuation-in-part of Ser. No. 725,482, Sep. 22, 1976, abandoned. Application for reissue May 17, 1979, Ser. No. 40,155

Int. Cl.[2] C25C *3/06*

U.S. Cl. 204—67 **11 Claims**



1. A process for purifying aluminum alloy comprising:

(a) providing the aluminum alloy in a molten state in a container having a porous membrane therein, said porous membrane being capable of containing molten aluminum in the container and being permeable by a molten electrolyte; and

(b) electrolytically transferring aluminum through said porous membrane to a cathode in the presence of the electrolyte, the transferring effected at a current density of greater than [200] *500* amps/ft^2 and characterized by depositing substantially all of the aluminum transferred through the porous membrane at the cathode, thereby substantially purifying said aluminum by separating it from its alloying constituents.

Re. 30,331

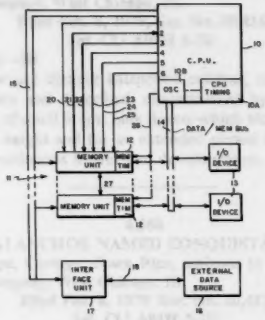
DATA PROCESSING SYSTEM HAVING A UNIQUE CPU AND MEMORY TIMING RELATIONSHIP AND DATA PATH CONFIGURATION

Karsten Sorensen, Lexington; David H. Bernstein, Ashland, and Michael B. Druke, Chelmsford, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Original No. 4,014,006, dated Mar. 22, 1977, Ser. No. 646,351, Jan. 2, 1976. Continuation of Ser. No. 387,523, Aug. 10, 1973, abandoned. Application for reissue Mar. 12, 1979, Ser. No. 19,578

Int. Cl.[3] G06F *13/00*

U.S. Cl. 364—200 **20 Claims**



8. A memory unit for use with a central processor unit of a data processing system, said memory unit comprising

memory timing means for providing memory timing control signals for controlling the operation of said memory unit;

means responsive to a memory enabling instruction signal from said central processor unit for enabling said memory timing means if said memory unit has been selected for access by the central processor unit; and

means further responsive to said memory enabling instruction signal for generating a disabling signal for supply to said central processor unit to instruct said central processor unit to remain in its current state when data which is to be read from said memory unit has not been made available for transfer to said central processor unit or when data which is to be stored in said memory unit has been made available for transfer to said memory unit from said central processor unit but said memory unit is not ready to accept data for storage.

PLANT PATENTS

GRANTED JULY 8, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,564
ROSE PLANT

Nelson F. Jolly, Galena, Md., assignor to Chattem, Inc., Chattanooga, Tenn.

Filed Mar. 5, 1979, Ser. No. 17,567
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by flowers of unusually constant orange red coloring which are very long lasting on the plant, up to 2 to 3 weeks, and as cut flowers, up to 7 to 8 days, and a vigorous, compact growing plant that blooms profusely.

4,565
VARIETY OF TROPICAL APRICOT SHRUB

William R. Farrell, 2406 SW. 42 Ave., Ft. Lauderdale, Fla. 33317

Filed Aug. 21, 1978, Ser. No. 935,556
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—33 **1 Claim**

1. A new and distinct variety of tropical apricot shrub substantially as described and illustrated having a leaf that is characterized by a central portion of dark and light green areas and a yellow perimeter surrounding the central portion.

4,566
NECTARINE TREE

Aaron Surabian, Reedley, Calif., assignor to Surabian Bros., Reedley, Calif.

Filed Feb. 12, 1979, Ser. No. 11,232
Int. Cl.[2] A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of Nectarine tree, substantially as illustrated and described, which is similar in size, productivity and regularity of bearing to the Red Grand variety of nectarine tree from which the new variety was derived as a seedling, the seedling was grown from an open-pollenated seed taken from a tree of the Red Grand variety growing near an orchard containing trees of the late LeGrand variety of nectarine tree; the new variety bears generally uniform, clingstone fruit characterized by yellow flesh and smooth skin having a strong red coloring over a moderate orange coloring, the strong red coloring spreading from a substantially solid covering near the base of the fruit to blotches of a strong red coloring near the apex of the fruit, and the fruit ripens in the San Joaquin Valley of California about four weeks later than the fruit of the Red Grand variety.

4,567
KALANCHOE NAMED PRINCESS

Claude Hope, Cartago, Costa Rica, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 8, 1979, Ser. No. 10,416
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct kalanchoe cultivar, substantially as herein shown and described, characterized by its abundant production of small bright pink florets which bloom on a plant of medium height and for an extended period due to several weeks of continuous flower bud developement.

4,568
KALANCHOE NAMED CONQUISTADOR

Claude Hope, Cartago, Costa Rica, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 8, 1979, Ser. No. 10,417
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct kalanchoe cultivar, substantially as herein shown and described, characterized by the orange-red coloration of its medium sized blooms, by its compact growth habit, and by the medium height of the flowering plant.

4,569
AFRICAN VIOLET NAMED JULIA

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 26, 1979, Ser. No. 15,355
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new variety of African violet plant, substantially as herein shown and described, characterized by its profuse production of medium sized bi-color flowers borne upright on rigid and erect stems and having white petals each with a bright blue margin.

PLANT PATENTS

GRANTED JULY 1, 1980

Illustrations for plant patents are usually in color, but due to the fact that it is not practicable to reproduce the drawings

4,566

ROSE PLANT

Melvin E. Jolly, Eularee Dell, assignor to Conard-Pyle Co., Crowley, Texas

Filed Nov. 5, 1979, Ser. No. 117,867

Int. Cl.² A01H 5/00

U.S. Cl. PP.—59 1 Claim

1. A new and distinct variety of rose plant of the floribunda class, substantially as shown and described, characterized particularly by flowers of unusually compact overall color, being yellow at the center of the plant, open to 2 to 2½ inches and in the flowers, up to 3 to 4 days, and a vigorous, compact growing form that blooms profusely

4,568

VARIETY OF TROPICAL HIBISCUS SHRUB

William R. Powell, 2806 SW. 46 Ave., Ft. Lauderdale, Fla., 33317

Filed Aug. 31, 1979, Ser. No. 071,259

Int. Cl.² A01H 5/00

U.S. Cl. PP.—59 1 Claim

1. A new and distinct variety of tropical hibiscus shrub substantially as described and illustrated herein, characterized by its vigorous and compact growth habit, its dark green foliage and its yellow petaloid flowers resembling the orchid genus

4,569

[illegible]

Aaron Hastings, Bradley, Calif., assignor to Hastings Bros., Bradley, Calif.

Filed Feb. 12, 1979, Ser. No. 11,222

Int. Cl.² A01H 5/00

U.S. Cl. PP.—61 1 Claim

1. A new and distinct variety of Nectarine tree substantially as illustrated and described, which is similar in size, productivity and ripening to the Red Grand variety of nectarine tree from which the new variety was derived as a seedling, the seedling was grown from open pollinated seed taken from a tree of the Red Grand variety growing near a medium colouring tree of the late Lemoyne variety or more, the new variety bears generally uniform colouring that characterized by yellow flesh and which has a a strong red coloring over a somewhat orange coloring. the new variety produces a substantially oval orange

4,570

[illegible]

Claude Hays, Corning, Calif., assignor to Procanneries Fruit Company, Nine Oaks, Calif.

Filed Feb. 8, 1979, Ser. No. 10,116

Int. Cl.² A01H 5/00

U.S. Cl. PP.—59 1 Claim

1. A new and distinct [illegible] substantially as shown and described, characterized particularly by [illegible] which blooms in [illegible] and has [illegible]

4,571

[illegible]

Claude Hays, Corning, Calif., assignor to Procanneries Fruit Company, Nine Oaks, Calif.

Filed Feb. 8, 1979, Ser. No. 10,115

Int. Cl.² A01H 5/00

U.S. Cl. PP.—59 1 Claim

1. A new and distinct [illegible] substantially as shown and described, characterized by the [illegible] and [illegible] by the medium length of the flowering [illegible]

4,572

[illegible]

Aubrey H. Hyden, Hyden Fruit Co., Inc., Dinuba, assignor to Fay-Ann Nursery, Dinuba, Calif.

Filed Feb. 19, 1979, Ser. No. 13,258

Int. Cl.² A01H 5/00

U.S. Cl. PP.—61 1 Claim

1. A new and distinct [illegible] substantially as shown and described, characterized by its [illegible] and [illegible] with a [illegible]

PATENTS

GRANTED JUL. 8, 1980

ERRATA

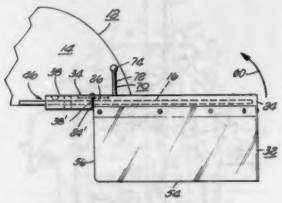
For CLASS	See PATENT NO.
433–229	4,211,008
433–126	4,211,009
368–272	4,211,064
368–047	4,211,065
368–113	4,211,066
368–185	4,211,067
072–250	4,211,095
073–345	4,211,124
024–269	4,211,389
430–359	4,211,558
430–211	4,211,559
430–313	4,211,560
430–306	4,211,561
430–456	4,211,562
430–286	4,211,563
548–112	4,211,703
556–470	4,211,717
568–424	4,211,726
568–437	4,211,727
525–106	4,211,729
375–002	4,211,891
371–015	4,211,915
371–015	4,211,916
371–020	4,211,917
455–601	4,211,920
455–075	4,211,975
455–344	4,211,976
455–326	4,211,977
455–295	4,211,978
455–306	4,211,979
455–040	4,211,980
371–037	4,211,996
371–038	4,211,997
370–030	4,212,013

PATENTS

GRANTED JULY 8, 1980

GENERAL AND MECHANICAL

4,210,972
DETACHABLE VISOR ARRANGEMENT
Paul S. Baclit, 2167 College View Dr., Monterey Park, Calif. 91754
Filed Apr. 24, 1979, Ser. No. 32,782
Int. Cl.[2] A42B *1/24*
U.S. Cl. 2—10 **12 Claims**



1. A detachable visor arrangement for a cap, said cap of the type having a head covering member and a bill member coupled thereto and extending outwardly therefrom, and said bill member having an upper surface, a lower surface, and peripheral edges, and comprising, in combination:

an arcuate rim means having a first end, a second end spaced a preselected distance from said first end, and in opposed relationship thereto, and a face shield holding member extending between said first end and said second end;

an arcuate face shield coupled to said arcuate face shield holding member of said arcuate rim means and extending a predetermined distance therefrom;

a first and a second hinge means coupled to said first and said second end, respectively, of said arcuate rim means;

a first clip means and a second clip means coupled to said first and said second hinge means, respectively, for detachable mounting on said peripheral edge of said bill member of said cap, and said first clip means mountable at a first location on said peripheral edge of said bill member of said cap and said second clip means mountable at a second location on said peripheral edge of said bill member of said cap for a first mounting condition of said face shield on said cap, and said first clip means mountable at said second location on said peripheral edge of said bill member of said cap and said second clip means mountable at said first location on said peripheral edge of said bill member of said cap for a second mounting condition of said face shield on said cap;

and said face shield extending downwardly from said lower surface of said bill member to regions below said bill member and said arcuate rim means adjacent said peripheral edge of said bill member for said face shield in a face guarding position of said first mounting condition, and said face shield pivotally movable on said hinge means in said first mounting condition from said face guarding position to a clear position wherein said rim means extends upwardly from said upper surface of said bill member of said cap;

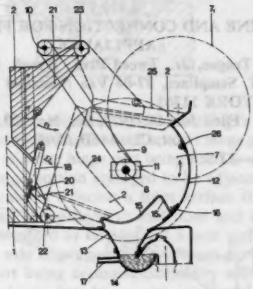
said arcuate rim means adjacent said peripheral edge of said bill member of said cap on the upper surface thereof and said face shield extending upwardly from said upper surface of said bill member of said cap for said face shield in said second mounting condition;

first restraining means for restraining said face shield in said face guarding position thereof;

second restraining means for restraining said face shield in said clear position thereof; and

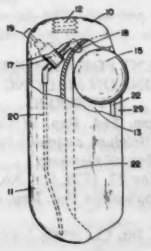
third restraining means for restraining said face shield in said second mounting condition.

4,210,973
SANITARY UNIT
Jean-Claude Decaux, 53 Avenue du Marechal Lyautey 75016, Paris, France
Filed Nov. 29, 1978, Ser. No. 964,454
Claims priority, application France, Dec. 2, 1977, 77 36370
Int. Cl.[2] E03D *11/00*
U.S. Cl. 4—420 **13 Claims**



1. A sanitary unit comprising wall means dividing the unit into a first part for receiving a user of the unit and a second part, a water-closer receiving vessel mounted to be movable between a first position of use in said first part and a vessel emptying and cleaning second position in said second part, the vessel having a closed bottom so as to be outlet-less and thereby retain matter received therein in said first position, said wall means including withdrawable wall means to allow movement of the vessel between said first and second positions, cleaning means located in said second part for cleaning the vessel in said second position, drain means located in said second part for receiving the matter removed from the vessel, shifting means combined with the vessel for shifting the vessel between said first position and second positions, actuating means combined with the cleaning means for actuating the cleaning means, and means associating operation of the actuating means with operation of the shifting means for actuation of the cleaning means when the vessel is in said second position.

4,210,974
PORTABLE GOLF BALL WASHER
Gary L. Stoltzman, 1287 Kennard St., St. Paul, Minn. 55106
Filed Jul. 13, 1979, Ser. No. 57,286
Int. Cl.[2] A63B *47/04*
U.S. Cl. 15—21 A **10 Claims**



1. A portable golf ball washer, comprising:

a. a substantially cylindrical elongated housing;

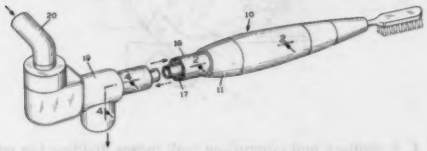
b. a completely enclosed chamber within said housing for storing cleaning fluid;
c. an elongated ball cleaning chamber within said housing having:
1. an opening for receiving a ball to be cleaned,
2. an elongated opening to permit holding the ball while cleaning,
3. an opening at the bottom for draining out dirt and cleaning fluid, and
4. cleaning means on an inner wall;
d. and means for applying cleaning fluid from said enclosed chamber to a ball located in the ball cleaning chamber.

4,210,975

FLUID LINE AND CONNECTION FOR FLUID-DRIVEN APPLIANCE

Walter D. Teague, Jr., Tweed Blvd., Nyack, N.Y. 10960, and Arthur T. Sempliner, 37-04 Van Nostrand Pl., Douglaston, Nebr.W YORK 11363

Filed Jun. 30, 1978, Ser. No. 920,685
Int. Cl.[2] A46B *13/02*
U.S. Cl. 15—22 R **12 Claims**



1. In the combination of a fluid device and a fluid conduit means connected to said device, said conduit means including first and second flexible tubes arranged concentrically, a swivel connection means for connecting said conduit means to said device, characterized by
(a) each of said flexible tubes including open end forming means,
(b) passage means in said device for receiving the end forming means of said first and second flexible tubes,
(c) O-ring elements associated with the end forming means of each of said tubes,
(d) internal shoulders formed within said passage means and forming seats for said O-ring elements,
(e) each of said O-ring elements being seated against one of said seats to retain said tubes in said passage means and being in a light, sealing relation with the complementary internal shoulder, the passage means, and the end forming means of the complementary flexible tube, whereby said O-ring elements form a seal around their respective tubes while permitting rotation of each of the tubes relative to the passage means of said device, and
(f) flange means extending radially outward from the end forming means of each of said tubes and overlying said O-ring elements on the sides thereof opposite said internal shoulders.

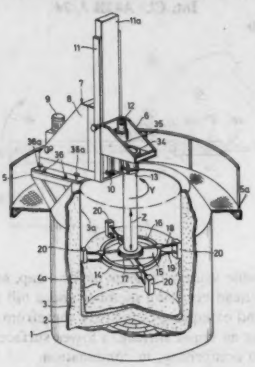
4,210,976

ARRANGEMENT FOR REMOVING THE SLAG INCRUSTATIONS ON MELTING AND CASTING VESSELS

Heinz Apelt, Roetgen, Fed. Rep. of Germany, and Helmut Packes, Kettenis, Belgium, assignors to Otto Junker GmbH, Simmerath, Fed. Rep. of Germany

Filed May 22, 1978, Ser. No. 908,246
Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723547
Int. Cl.[2] B08B *1/04*
U.S. Cl. 15—246.5 **17 Claims**

1. A device for removing incrustations from the inner wall surface of a cylindrical vessel defining a central axis, comprising a driven body; means for mounting said body on a vessel so that said body rotates about said axis and is movable lengthwise of the same while being prevented from movement transversely of said axis; a plurality of impact tools spaced circumferentially about said body and each having a straight abrading edge adjacent the inner wall surface and a face directed towards said axis; and a pair of axially spaced flexible links of identical radial length for each of said impact tools and having inner ends connected to said body and outer ends connected to



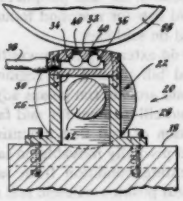
the respective face at locations thereof which are spaced lengthwise of said axis, such that the abrading edge of each impact tool is held along the inner circumference of the vessel lining in an operating position in which it extends approximately parallel to said axis during rotation of said body and beyond which it cannot approach the vessel lining in radial direction, so that the tool can remove deposits from the vessel lining but cannot damage the vessel lining itself.

4,210,977

AIR CLEANING APPARATUS

Harold R. Lillibridge, San Mateo, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed Feb. 28, 1979, Ser. No. 15,787
Int. Cl.[2] B08B *5/02*
U.S. Cl. 15—306 R **6 Claims**



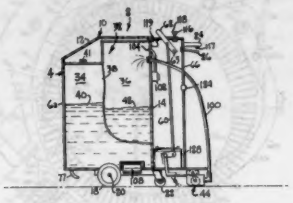
1. Air cleaning apparatus for removing adhesive from a rotatably mounted applicator roll of an adhesive applicating device comprising:
rotatable roller means, mounted in contacting relation with said applicator roll, said roller means for imparting a rotation to said applicator roll;
air guide means mounted adjacent said applicator roll, said air guide means including air jet means on opposite sides of said roller means for issuing an air stream against the surface of said applicator roll to clean the same as it is rotated by said roller means.

4,210,978

AUTOMATIC CARPET CLEANING MACHINE

Richard C. Johnson; Otto R. Kafer, both of Saint Paul, and Mike J. Todd, Rosemount, all of Minn., assignors to H. B. Fuller Company, Saint Paul, Minn.

Filed Dec. 20, 1977, Ser. No. 862,377
Int. Cl.[2] A47L *11/292, 11/30*
U.S. Cl. 15—320 11 Claims



4. A carpet cleaning machine, which comprises:

(a) a body movably supported by at least one drive wheel for movement over the carpet;

(b) a powered drive means carried on the body and operatively connected to the drive wheel for moving the body at least in a forward direction;

(c) storage means carried on the body for storing cleaning solution therein, the storage means comprising an enclosed fluid-tight cavity in the body which is divided into first and second fluid-tight storage chambers by means of a flexible membrane, wherein the storage means is substantially permanently mounted on the body and the membrane is substantially permanently carried inside the cavity during a plurality of successive carpet cleaning operations so that the first and second storage chambers can be filled and emptied without removing the membrane from the cavity or the storage means from the body, and wherein the volumes of the first and second storage chambers are inversely related to one another such that the volume of the first storage chamber is at a maximum when the volume of the second storage chamber is at a minimum, the first storage chamber being suitable for containing fresh cleaning solution therein and the second storage chamber being suitable for containing spent cleaning solution therein;

(d) scrubbing means carried by the body for cleaning the carpet, the scrubbing means comprising:

(i) means for applying the fresh cleaning solution held in the first storage chamber to the carpet, the applying means including pump means for withdrawing the fresh cleaning solution from the first storage chamber;

(ii) means for agitating the fresh cleaning solution in contact with the carpet to remove foreign material therefrom, whereby the fresh cleaning solution is converted into the spent cleaning solution; and

(iii) means for removing the spent cleaning solution from the carpet and placing the spent solution in the second storage chamber, wherein the removing means includes means for drawing a vacuum in the second storage chamber for picking up and transporting the spent cleaning solution thereto; and

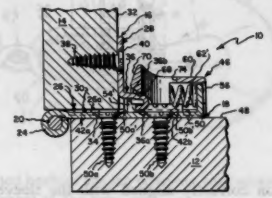
(e) control means for simultaneously activating the pump means and vacuum drawing means, whereby spent cleaning solution is placed into the second storage chamber as fresh cleaning solution is removed from the first storage chamber.

4,210,979

HINGE

Kenneth J. Boyd, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Jan. 2, 1979, Ser. No. 340
Int. Cl.[2] E05D *11/00*
U.S. Cl. 16—147 8 Claims



1. In a hinge latch mechanism for mounting a door on a cabinet or the like including first and second hinge parts joined by pivot means, said first hinge part being fixed to said cabinet and having a flange portion arranged to lie adjacent an inner surface of said cabinet adjacent a front surface thereof, said second hinge part being fixed to said door and including a flange portion arranged to lie adjacent a rear surface of said door adjacent a side edge thereof, said flange portion of said second hinge part being arranged essentially normal to said flange portion of said first hinge part when said door is in closed position, a strike and a keeper assembly mounted on said flange portions of said first and second hinge parts, respectively, and cooperating upon closing movements of said door for releasably latching said door in said closed position, the improvement wherein said keeper assembly comprises in combination:

a housing having camming and retaining surfaces;

mounting means for mounting said housing on said flange portion of said second hinge part for reciprocating movements between latched and release positions; and

spring means for biasing said housing towards said latched position, said housing cooperating with said flange portion of said second hinge part for enclosing said spring means, and said camming and retaining surfaces being arranged to successively engage with said strike, during closing movements of said door, for initially forcing said housing to move from said latched position against said bias of said spring means and for subsequently retaining said door in its closed position, respectively.

4,210,980

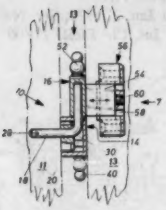
CABINET HINGE, ESPECIALLY FOR PERIOD FURNITURE

Karl Lautenschlager, Jr.; Horst Lautenschlager, and Reinhard Lautenschlager, all of Reinheim, Fed. Rep. of Germany, assignors to Karl Lautenschlager KG Mobelbeschlagesbrik, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,735
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758090
Int. Cl.[2] E05D *3/02*
U.S. Cl. 16—171 15 Claims

1. A hinge for cabinet doors or lids, especially for period furniture, comprising: two visible, sleeve-like hinge parts to be fastened to the supporting wall of the cabinet and to the cabinet door or lid, respectively, a pintle held in one of the hinge parts and engaging a complementary bore in the other hinge part, said hinge parts being swingable relative to one another about the longitudinal axis of said pintle, a mounting pin integral with said pintle and added at approximately right angles to its end held in the hinge part and fastenable in a bore of the associated cabinet part, said visible, sleeve-like hinge part holding the pintle having on the side facing the associated cabinet part an aperture through which the mounting pin can

be passed during assembly and from which the mounting pin protrudes, and a plug holding said pintle and said mounting pin



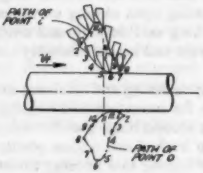
in the position correctly aligned with the sleeve-like hinge part, said plug being pushed onto the mounting pin and plugging up the aperture in the hinge part.

4,210,981

ECTATING RING SHIRRING METHOD AND APPAPATUS

Albert G. Story, Brookfield, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 947,041
Int. Cl.[2] A22C *13/02*
U.S. Cl. 17—45 **6 Claims**



1. A method for shirring inflated cylindrical flexible tubing into shirred sticks, which method comprises directing the tubing along its longitudinal axis against a substantially constantly yielding force with a continuously applied gyrating arcuate line of shirring force, sequential portions of which line are directed to

(a) impinge on the tubing outer surface,

(b) urge the tubing forward in the direction of shirring progression while simultaneously indenting the tubing radially inward,

(c) continue the simultaneous direction of the shirring force forward and radially inward until a substantially complete major shirred pleat is formed, and

(d) continue the simultaneous direction of the shirring force forward and radially outward to compact the formed pleat against a shirred stick in formation.

3. Apparatus for shirring flexible tubing, comprising, in combination:

(a) a shirring station housing;

(b) an elongated hollow tubular mandrel passing through said housing having a longitudinal axis parallel with the longitudinal centerline of said housing;

(c) a yoke assembly disposed around the mandrel, rotatably mounted on said housing so as to have its rotational axis in parallelism with and offset eccentrically from the longitudinal axis of the mandrel;

(d) annular shirring ring means disposed around the mandrel rotatably mounted within the yoke assembly disposed in a plane displaced angularly from the mandrel longitudinal axis, and

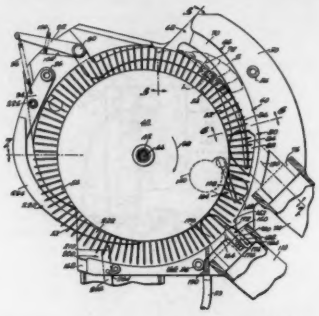
(e) motive means to impart rotation to the yoke assembly.

4,210,982

SHRIMP PROCESSING METHOD

Paul H. Hoffman, 18003 N.W. 78 Ave., Hialeah, Fla. 33015, and John A. Lessig, 4140 Hardie Ave., Miami, Fla. 33133

Division of Ser. No. 727,647, Sep. 29, 1976, Pat. No. 4,087,887.
This application May 4, 1978, Ser. No. 903,010
Int. Cl.[2] A22C *29/02*
U.S. Cl. 17—48 **4 Claims**



1. In the processing of fantail shrimp, the steps of

advancing ventrally impaled deheaded shrimp along a predetermined path;

longitudinally severing the abdominal membrane of said ventrally impaled shrimp while preventing decrease in the depth of impalement; and

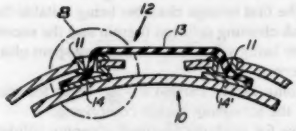
pneumatically separating the shell portions of said membrane severed shrimp from the impaled meat portion thereof.

4,210,983

EYELET CLAMP FOR SHOES

Robert L. Green, 2744 N. 60th St., Scottsdale, Ariz. 85257

Filed Jan. 5, 1979, Ser. No. 1,223
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—73 ES **4 Claims**



1. A shoe fastener for extending between cooperating pairs of eyelets of the shoe comprising:

a flat resilient elongated member,

a pair of gripping members one covering substantially a different end of only one common surface of said resilient member and being bonded thereto along only terminal end parts of their lengths,

the second parts of the lengths of said gripping members comprising an unbonded tab portions juxtapositioned to each other along the length of said resilient member,

the ends of said resilient member including the gripping members when moved through an eyelet of a shoe causing said resilient member to separate from the associated gripping member along the unbonded portion thereof to form clamps for engaging the periphery of the associated eyelets of the shoe between said resilient member and the said second parts of the gripping members.

4,210,984

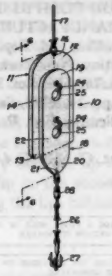
FISHING APPARATUS

Burton G. Koenig, 807 Avenue C, Bayonne, N.J. 07002

Continuation-in-part of Ser. No. 621,648, Oct. 14, 1975, abandoned. This application Feb. 13, 1978, Ser. No. 876,877

Int. Cl.[2] A44B *17/00*

U.S. Cl. 24—201 HE **1 Claim**



1. A fishing apparatus comprising:

(a) a back plate having a front face, a back face, an upper end and a lower end, the upper end being formed with a hole for the attachment to a fishing line;

(b) at least two members extending from the front face of the back plate, each member having a stem extending outwardly from the front face and each stem having a securing element at its outer end, which element comprises an upwardly opening hook having an upwardly and inwardly curved portion extending from the stem and an end portion substantially adjacent to the front face of the back plate;

(c) a front plate formed of semi-rigid material having a front face, a back face, an upper end and a lower end, the lower end being formed with a hole, the lower end of the front plate extending below the lower end of the back plate, the front plate being formed with at least two individual spaced openings opposed to the securing elements on the back plate wherein each opening is adapted to fit over the hook to hold the front plate against the back plate by frictional engagement of the end portion of the hook against the front face of the front plate; and

(d) a leader attached to the lower end of the front plate for the attachment of fishing accessories.

4,210,985

SLIDE FASTENER STRINGER WITH FOLDED AND BONDED CONTINUOUS MOLDED COUPLING ELEMENT AND METHOD AND APPARATUS FOR MANUFACTURING

George W. Scott, Conneaut Lake, Pa., assignor to Textron, Inc., Providence, R.I.

Filed May 17, 1976, Ser. No. 687,074

Int. Cl.[2] A44B *19/24*

U.S. Cl. 24—205.16 R **2 Claims**

1. A stringer for a slide fastener comprising

a tape,

a train of molded synthetic polymer coupling elements disposed along one longitudinal edge of the tape,

each of said coupling elements having a head portion and a pair of leg portions which extend in the same directon from opposite sides of the head portion,

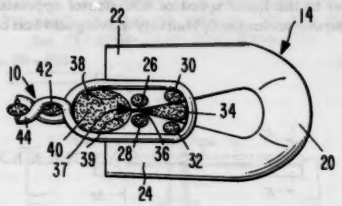
said leg portions terminating in heels thereof opposite to the head portions,

first and second connecting thread means having segments embedded in the respective leg portions to connect the coupling elements in the train,

said leg portions being bonded together adjacent their heels,

securing thread means extending around the connecting thread means between the coupling elements to secure the train of coupling elements to the one edge of the tape,

said coupling elements each including a groove formed in



the joined heels of the leg portions, said grooves extending longitudinal to the tape, and

a support cord in the one edge of the tape laying in the grooves of the coupling elements.

4,210,986

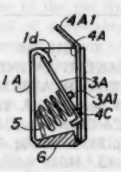
TILT RELEASE CATCH

Curtis Williams, 200 Center Plz., Apt. 321, Tulsa, Okla. 74119

Continuation-in-part of Ser. No. 881,536, Feb. 27, 1978, abandoned. This application Feb. 12, 1979, Ser. No. 11,380

Int. Cl.[2] A44B *11/25, 11/12*

U.S. Cl. 24—230 TC **7 Claims**



1. A tilt release catch comprising a housing member having a dog supported in a housing and constantly pressing against an opposite wall, a male member adapted for insertion between the dog member and said opposite wall and having an aperture for receiving one end of the dog therein in a locking position therebetween, and a stud member provided between the male member and the dog for releasing the engagement of the male member therefrom.

4,210,987

APPARATUS FOR FEEDING A MOVING WEB TO A STENTER APPARATUS

Nigel C. Benson, Ickleford; John M. F. Hughes; Denis Kingslake, both of Stevenage, and David G. Symonds, Hatfield, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 816,192, Jul. 15, 1977, Pat. No. 4,173,611. This application Mar. 10, 1978, Ser. No. 885,343

Claims priority, application United Kingdom, Apr. 5, 1977, 14315/77

Int. Cl.[2] D06C *3/00*

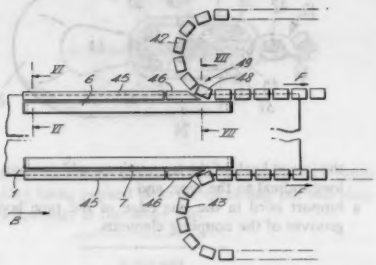
U.S. Cl. 26—89 **7 Claims**

1. An assembly comprising a stenter apparatus and means for initially introducing a moving web into said stenter apparatus;

said stenter apparatus comprising linearly moving edge grips movable at a given linear speed over predetermined paths; and

said introducing means comprising: at least one conveyor belt located on one side of the moving web and at least one other conveyor belt located on the other side of the moving web, each of said conveyor belts extending into said stenter apparatus and terminating inwardly of the paths of

said edge grips of said stenter apparatus; said conveyor belts being positioned so that the edge margins of the web extend beyond the edges of the conveyor belts; means for driving said conveyor belts at a linear speed substantially equal to the linear speed of said stenter apparatus edge grips; and means for operatively moving said belt conveyors into and out of operative association with the web so that when said belt conveyors are in operative association with the web they grip and transport the web into operative association with said edge grips of said stenter apparatus, and so that when said belt conveyors are not in operative association with the web they do not engage or affect the movement of the web.



4,210,988

METHOD FOR MAKING AN INDIRECTLY-HEATED CATHODE ASSEMBLY

John C. Turnbull, and Benjamin F. Yoder, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 24, 1978, Ser. No. 936,529

Int. Cl.[2] H01J *9/02, 9/18*

U.S. Cl. 29—25.15 **10 Claims**

1. In a method for making an indirectly-heated cathode assembly including a cathode substrate having electron-emissive material on one surface thereof and a heater fixedly spaced from the opposite surface thereof, the steps for assembling said heater to said cathode substrate comprising

(a) spacing said heater from said opposite surface of said cathode substrate with a spacer material which, upon heating, decomposes substantially entirely into volatile fragments,

(b) fixing said heater in said spaced position with respect to said cathode substrate

(c) and then heating said spacer material to decompose it into volatile fragments.

4,210,989

METHOD OF MANUFACTURING A CAPACITOR ROLL, AND A CAPACITOR COMPRISING A ROLL THUS MANUFACTURED

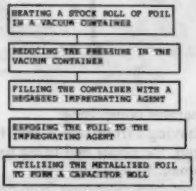
Johann Schmalz, Bischoffen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 763,656, Jan. 28, 1977, abandoned. This application Apr. 24, 1978, Ser. No. 899,288

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2605663

Int. Cl.[2] H01G *4/18*

U.S. Cl. 29—25.42 **4 Claims**


HEATING A STOCK ROLL OF FOIL IN A VACUUM CONTAINER
REDUCING THE PRESSURE IN THE VACUUM CONTAINER
FILLING THE CONTAINER WITH A DEGASSED IMPREGNATING AGENT
EXPOSING THE FOIL TO THE IMPREGNATING AGENT
UTILISING THE METALLISED FOIL TO FORM A CAPACITOR ROLL

1. A method of manufacturing a capacitor roll comprising the steps of:

heating a stock roll of metallized dielectric foil of synthetic material, without a moisture-absorbing intermediate layer, in a vacuum container;

reducing the pressure in said vacuum container;

filling said vacuum container with a degassed impregnating agent;

exposing said dielectric foil in said vacuum container to said impregnating agent; and

subsequently utilizing said metallized dielectric foil to form a capacitor roll.

4,210,990

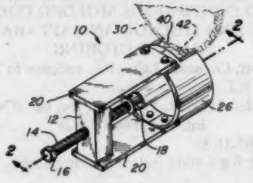
GEAR PULLER

Raymond L. Krieger, Denver, Colo., assignor to B. K. Sweeney Manufacturing Company, Denver, Colo.

Filed Dec. 14, 1978, Ser. No. 969,448

Int. Cl.[3] B23P *19/04*

U.S. Cl. 29—263 **4 Claims**



1. Apparatus for pulling a press-fitted gear from a shaft comprising in combination:

puller assembly means including a rigid structural member and a screw thrust member threadedly received in the structural member for reciprocal movement relative to the structural member,

first and second puller jaws means, each having a semi-cylindrical wall, such that the jaw means can be placed in side-by-side relationship to form a generally cylindrical wall, each of said puller jaw means having a radially

inturned lip extending along a portion of its periphery at one end of said semi-cylindrical wall, each of said puller jaws means also having a notch in the semi-cylindrical wall at said one end,

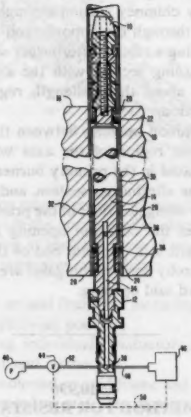
leg means each connected to said structural member and pivotally connected to each of said puller jaws means at a point laterally displaced from a plane passing through the centerline of said screw thrust member and said leg means, said pivot connection being adjacent the upper extremity of said semi-cylindrical wall, at least one said connections to said puller jaw means being adjacent to and in axial alignment with said notches in said puller jaws means so that when said lips on said puller jaw means are positioned behind said gear and the thrust member is advanced against said shaft, the leg means will pull on the puller jaw means and pivotally bias the lip on the first puller jaw means toward the lip on the second puller jaw means to assist in maintaining the lips behind the gear.

4,210,991

HYDRAULIC EXPANSION SWAGING OF TUBES IN TUBESHEET

Frank W. Cooper, Jr., Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 5, 1978, Ser. No. 939,553
Int. Cl.[2] B23P *11/00*; B21D *26/02, 39/08*
U.S. Cl. 29—421 R **7 Claims**



1. The method of hydraulically expansion-swaging a tube into a bore of a tube sheet comprising:

inserting a hydraulic expansion mandrel into the length of tube situated in the bore;

introducing fluid into the annular pressure space defined radially between the mandrel core and said tube, and defined axially by the opposite end seals of the mandrel;

increasing the pressure of the fluid to a value in one predetermined lower range and, then, without reducing that pressure;

applying a short pulse to increase the pressure of the fluid in the annular pressure space for a very short period to a higher value of at least double said lower value, and

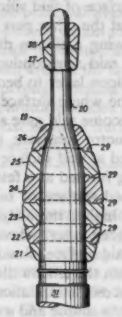
finally releasing said pressure in said annular space and removing said mandrel.

4,210,992

METHOD OF MAKING A MOLDED PLASTIC BOWLING PIN

George G. Murray, R.D. 5 Box 28, Jackson, N.J. 08527

Division of Ser. No. 757,480, Jan. 6, 1977, Pat. No. 4,123,057.
This application Jun. 26, 1978, Ser. No. 919,326
Int. Cl.[2] B29D *27/00, 9/10*; B32B *1/06*
U.S. Cl. 29—525 **2 Claims**



1. A process for the manufacture of a bowling pin having a base, side walls, belly, neck and head, which comprises:

(a) assembling a core of molded filled polymer elements extending lengthwise of the pin from the base into the head and constituted of a plurality of molded annular filled polymer elements of varying sizes and shapes having a weight distribution such that the pin meets the standards set by the American Bowling Congress by mounting said molded filled polymer elements on an internal core holder extending substantially the desired length of said pin;

(b) injection-molding a plastic material shell directly on the core, the shell bonding to and being formed integrally with the core and providing the side walls, belly, neck and head of the pin and providing a cavity adjacent the bottom of the core;

(c) removing the core holder from the composite molded article following step (b); and

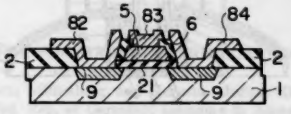
(d) fitting an independent, impact-resistant plastic material base element into the cavity to define the base of said pin.

4,210,993

METHOD FOR FABRICATING A FIELD EFFECT TRANSISTOR

Hideo Sunami, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Continuation of Ser. No. 806,531, Jun. 14, 1977, abandoned.
This application Feb. 2, 1979, Ser. No. 8,837
Claims priority, application Japan, Sep. 17, 1975, 50-111622
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—571 **7 Claims**



1. A method for fabricating a field effect transistor, comprising the steps of:

forming a silicon dioxide film having a region where said silicon dioxide film becomes thinner at that area on one surface of a silicon semiconductor substrate of a first conductivity type at which the field effect transistor is to be formed,

depositing on said silicon dioxide film a polycrystalline

silicon layer which has an impurity concentration higher than that of said silicon semiconductor substrate,

removing said polycrystalline silicon layer by selective etching so as to leave only a part which becomes a gate of said field effect transistor,

removing a surface part of said silicon dioxide film over the entire area by employing as a mask said part of said polycrystalline silicon layer to become said gate and to the extent that the surface of said silicon semiconductor substrate is exposed at the other part in said region,

simultaneously growing a silicon dioxide film on said exposed surface of said semiconductor substrate and said polycrystalline silicon layer to become said gate by thermally oxidizing the whole surface of said polycrystalline silicon layer to become said gate and the exposed surface on said semiconductor substrate, the silicon dioxide film thickness produced at said surface of said polycrystalline silicon layer being formed at a faster rate than the thickness at the exposed surface of said semiconductor substrate due to the higher impurity concentration of said polycrystalline silicon layer, whereby the silicon dioxide film produced at said surface of said polycrystalline silicon layer is thicker than the silicon dioxide film produced at said exposed surface of said semiconductor substrate,

forming windows for a source and a drain by removing said silicon dioxide films over the entire area by such thickness that said surface of said silicon semiconductor substrate is exposed at the part in said region other than said part covered by said polycrystalline silicon layer to become said gate, but that said polycrystalline silicon layer is not exposed due to the greater thickness of the silicon dioxide film on said polycrystalline silicon layer,

forming the source and the drain by doping surface portions of said semiconductor substrate with an impurity of a second conductivity type opposite to said first conductivity type through the windows formed by the preceding step,

removing a part of said silicon dioxide film by selective etching so as to expose a part of said polycrystalline silicon layer,

depositing an electric conductor over the entire area, and

forming said electric conductor into a predetermined pattern by selective etching, thereby to form source, gate and drain electrodes.

4,210,994

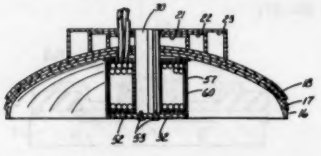
METHOD OF MANUFACTURING A COOLED LIFTING MAGNET WITH DAMPED EDDY CURRENTS

Charles A. Schwartz, 23366 Commerce Park, Beachwood, Ohio 44122

Division of Ser. No. 720,256, Sep. 3, 1976, Pat. No. 4,103,266. This application Jul. 24, 1978, Ser. No. 927,302

Int. Cl.[2] H01F *41/02*

U.S. Cl. 29—606 **2 Claims**



1. A process for fabricating an electromagnet for lifting scrap ferromagnetic material, comprising welding plural dished shells in nesting relationship one with another to form a dome-shaped metal case having a hollow interior, said nesting relationship being characterized by contact of the exterior surface of an inner dished shell with the interior surface an outer dished shell, so that said inner dished shell and said outer dished shell are in unimpeded magnetic communication with each other;

cutting at least one radial slot in said metal case, said slot extending from near the center of said case to near its periphery;

welding a central core extending longitudinally within said metal case, and removably disposing an internally coolable conducting coil on said core.

4,210,995

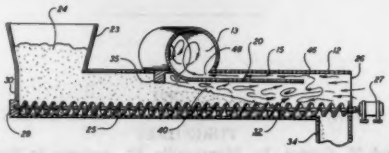
METHOD OF CONSTRUCTING A BURNER

Richard W. Heimburg, 831 Ackerman Ave., and Donald M. Stewart, 104 Robert Dr., both of Syracuse, N.Y. 13210

Division of Ser. No. 832,191, Sep. 12, 1977, Pat. No. 4,132,179. This application Nov. 3, 1978, Ser. No. 957,548

Int. Cl.[2] B23P *15/00*; F23G *3/00*

U.S. Cl. 29—157 R **5 Claims**



1. The method of constructing a self-sustaining burner for efficiently processing a wide variety of fuels including

positioning an open ended, generally tubular primary burning section in a horizontal plane so that fuel is able to enter the primary chimney section through one end and combustion air through the opposite end thereof,

obliquely joining a tubular afterburner section on top of said primary burning section with the axes of both sections crossing at about the midlength region of the primary burning section,

forming a common opening between the sections at about the crossover region of the axes whereby combustion gases generated in the primary burner section are able to flow into the afterburner section, and

positioning an elongated duct in the primary burning section that encloses the common opening and which extends axially toward said opposite end of the primary burning section whereby combustion gases are accelerated as they move toward said opening.

4,210,996

TRIMMING METHOD FOR RESISTANCE VALUE OF POLYCRYSTALLINE SILICON RESISTORS ESPECIALLY USED AS SEMICONDUCTOR INTEGRATED CIRCUIT RESISTORS

Yoshihito Amemiya, Fuchu, and Kotaro Kato, Chofu, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Filed Apr. 26, 1978, Ser. No. 900,300

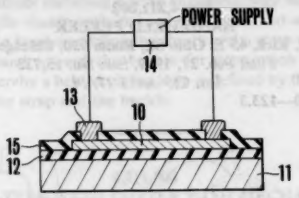
Claims priority, application Japan, May 4, 1977, 52/51388

Int. Cl.[2] H01H *10/00*

U.S. Cl. 29—610 R **11 Claims**

1. A method of trimming the resistance value of a polycrystalline silicon resitor, especially the initial resistance value of a polycrystalline silicon resistor utilized as a resistance element of a semiconductor integrated circuit, said method comprising the steps of forming a resistor having a predetermined initial resistance value by doping an impurity into polycrystalline silicon at a concentration higher than 1×10^{20} atoms/cm^3, and

passing current through said resistor from an external power supply at a current density higher than 1×10^6 A/cm^2 so as to



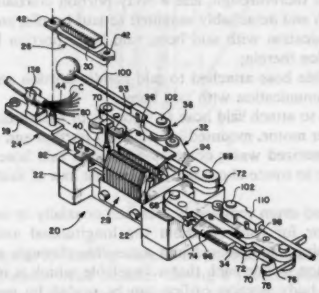
decrease said initial resistance value, thereby correcting the resistance value of the resistor.

4,210,997

CONDUCTOR TERMINATING APPARATUS

Harley R. Holt, Forest Park, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 735,955, Oct. 27, 1976, abandoned.
This application Sep. 15, 1978, Ser. No. 942,855
Int. Cl.² H01R *43/04*
U.S. Cl. 29—566.3 **28 Claims**



1. An apparatus for simultaneously terminating a plurality of insulated conductors in the contacts of an electrical connector, said connector having at least one row of contacts defining a contact plane, said apparatus comprising:

a frame;

means supported on said frame for mounting said connector in conductor receiving position;

means for aligning individual conductors adjacent respective contacts of said connector;

at least one arm mounted on said frame and including means for rotatably moving said arm from an open position remote from said connector to a closed position immediately adjacent said row of contacts:

insertion means carried by said arm for engaging and pressing said insulated conductors into the individual contacts of said connector, said insertion means comprising an elongated insertion member having a plurality of insertion blades and means for accommodating movement of said insertion member both laterally and longitudinally with respect to said arm;

means for guiding said insertion member to thereby facilitate the proper alignment of said insertion member; and

means for applying an operating force to said insertion means to effect a reciprocal and non-arcuate movement of said insertion member substantially perpendicular to said contact plane, thereby terminating each conductor in an individual contact of the connector.

4,210,998

TOUGHENING OF PVC-SEPARATOR-ENVELOPED BATTERY PLATES

Conrad L. Gaunt, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 4, 1978, Ser. No. 966,056
Int. Cl.² H01M *2/16*
U.S. Cl. 29—623.4 **3 Claims**

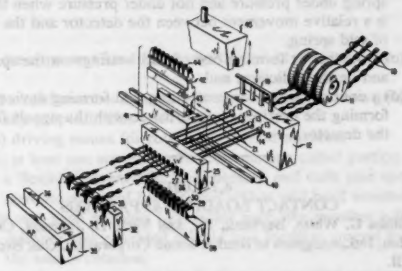
1. In the process of making PVC-separator-enveloped battery plates, including the principal steps of enfolding the plate along the bottom edge thereof within a sheet of sintered microporous polyvinyl chloride separator material and cohesively bonding the sheet to itself around the lateral edges of the plate, the improvement comprising: wicking a PVC plasticizer into the fold and up the separator portions contiguous said fold to toughen said fold against damage during subsequent in-plant handling of said enveloped plate.

4,210,999

METHOD FOR WIRING ELECTRICAL BAYS

Arnold R. Smith, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 801,587, May 31, 1977, Pat. No. 4,117,585.
This application Jul. 13, 1978, Ser. No. 924,153
Int. Cl.² H01R *43/04*
U.S. Cl. 29—857 **6 Claims**



1. A method of wiring electrical apparatus with twisted pairs of insulated electrical conductors sequentially comprising the steps of:

(a) selectively indexing one end of each of said pairs and the members of each of said pairs in a preselected orientation;

(b) mass-terminating said one end of all of said conductors in an electrical connector;

(c) advancing said one mass-terminated end for a predetermined length; and

(d) selectively indexing each of said pairs and the members of each of said pairs in said preselected orientation at said predetermined length, thereby to facilitate individually terminating each of said conductors at said predetermined length in said electrical apparatus.

4,211,000

DEVICE FOR PRODUCING A SPRING MANOMETER MEASURING SYSTEM

Kurt Neubeck, Miltenberg, and Hermann Julien, Klingenberg, both of Fed. Rep. of Germany, assignors to Alexander Wiegand GmbH, Klingenberg, Fed. Rep. of Germany

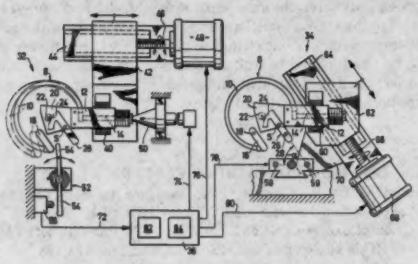
Division of Ser. No. 854,645, Nov. 25, 1977, Pat. No. 4,148,123.
This application Jan. 24, 1979, Ser. No. 5,968
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1976, 2654279; Nov. 30, 1976, 2654270; Sep. 25, 1977, 2743785
Int. Cl.² G01F *1/38*
U.S. Cl. 29—714 **18 Claims**

1. A device for producing a spring manometer measuring system consisting of an indicator, a spring serving as a devia-

tion detector and a tie rod connecting the indicator to the spring and also articulating on bearings on the indicator on the one hand and on the end of the spring on the other hand, comprising

(a) a measuring device including a clamping chuck for clamping said spring into position and a pressure medium connection through which the spring can be supplied with a pressure medium,

(b) a measuring means belonging to said measuring device for measuring the deflection of said spring when subjected



to pressure which includes a detector which supplies signals corresponding to the positions of the end of the spring under pressure and not under pressure when there is a relative movement between the detector and the end of said spring,

(c) a device for forming one of said bearings on the spring and on the indicator, and

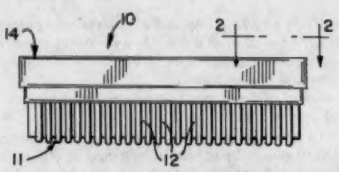
(d) a control device for controlling said forming device for forming the bearings in accordance with the signals from the detector.

4,211,001

CONTACT LOADING APPARATUS

William G. White, Burbank, Ill., and Verle D. Johnson, Corydon, Ind., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Apr. 13, 1978, Ser. No. 895,836
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—747 **11 Claims**



1. Apparatus for loading discrete electrical contacts into a plurality of pockets in an electrical connector, said apparatus comprising:

contact assembly means for assembling a plurality of contacts in proper orientation for insertion into said pockets;

contact transfer means for transferring said contacts from said contact assembly means into said pockets; and

contact seating means for seating said contacts in a final mounted position within each connector pocket;

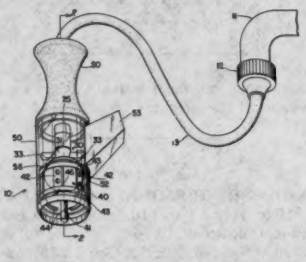
said assembly means including contact feeding means and contact spacing means, said feeding means transporting said contacts to said spacing means and said spacing means automatically separating adjacent contacts to coincide with the spacing of the connector pockets, said spacing means comprising a rotating member positioned adjacent said feeding means and having radial extensions which engage and direct individual contacts into cooperation with said contact transfer means.

4,211,002

HAND-HELD PEELER

Norbert A. Kirk, 43 E. Ohio St., Room 930, Chicago, Ill. 60611

Filed Feb. 27, 1979, Ser. No. 15,723
Int. Cl.[2] A47J *17/14*
U.S. Cl. 30—123.3 **10 Claims**



1. A hand-held peeler for peeling vegetables and the like comprising:

an elongate housing, including a handle portion having a bore therethrough, and a body portion coaxially aligned with and detachably mounted to said handle, and in communication with said bore, said body portion having an orifice therein;

a flexible hose attached to said handle portion and in fluid communication with said bore;

means to attach said hose to a source of pressurized water;

a water motor, mounted in said body portion and driven by pressurized water conducted through said hose and said bore to rotate about the longitudinal axis of said housing; and

a bladed drum removably attached coaxially to said water motor for rotation about the longitudinal axis of said housing and exposed and accessible through said body portion orifice such that a vegetable which is inserted in said body portion orifice can be peeled by said bladed drum.

4,211,003

ADAPTABLE KNIFE SHEATH

Walter W. Collins, Rock Hill, S.C., assignor to Jenkins Metal Corporation, Gastonia, N.C.

Filed Jul. 26, 1978, Ser. No. 928,280
Int. Cl.[2] B26B *29/02*; F41B *13/04*
U.S. Cl. 30—162 **2 Claims**

1. A knife including a blade and a handle and a sheath having an open end to receive the knife blade, means for normally positively locking the knife and sheath together, means sup-

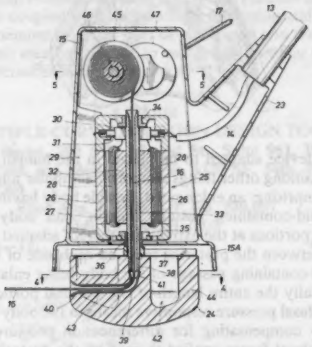
porting the sheath and its knife upside down with the knife handle below the sheath, said means including a buckle fastened to one surface of the sheath remote from its open end, a shoulder harness including a strap engagable with said buckle to support the sheath with its open end down, and an adapter comprising a band encircling the sheath and a strap extending from the band toward the buckle for connection with the buckle, whereby a belt receiving loop is defined by the sheath, the band, the strap and the buckle.

4,211,004

STRING-TYPE WEED CUTTER WITH MECHANICAL LINE FEED

Donald M. Woods, Houston, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 22, 1975, Ser. No. 624,928
Int. Cl.[2] B26B *27/00*
U.S. Cl. 30—276 **29 Claims**



1. Apparatus for cutting vegetation and the like, comprising:

(a) a rotatable head member having a tubular passageway extending therethrough between its periphery and a point adjacent its axis;

(b) driving means axially interconnected with said head member for rotating said head member in a cutting plane, and said driving means including a hollow rotatable shaft member interconnecting at one end to said passageway in said head member;

(c) a flexible non-metallic line member having a coiled portion positioned independently of rotation of said head member, and from said coiled portion, an unwound portion extending through said hollow shaft and said passageway and radially from adjacent the periphery of said head member to provide a free-traveling cutting end arcuately movable in said cutting plane;

(d) feed means for selectively unwinding and extending additional lengths of said line member from said periphery of said head member and for anchoring said line member against being drawn from said head member;

(e) said feed means including storage spool means for supporting said coiled portion of said line member and rotatably positioned adjacent said hollow shaft of said driving means;

(f) a revolvable flexible shaft member;

(g) actuator means interconnecting said flexible shaft member and said storage spool means and rotatable in response to rotation of said flexible shaft member; and

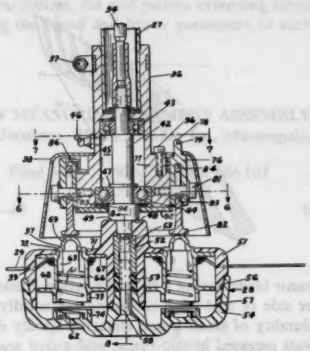
(h) said actuator means further being non-rotatable in response to rotation of said spool means independently of rotation of said flexible shaft member.

4,211,005

APPARATUS FOR CUTTING VEGETATION

Donald M. Woods, Houston, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 818,626, Jul. 25, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,381
Int. Cl.[2] A01G *3/06*; A01D *35/26*
U.S. Cl. 30—276 **48 Claims**



1. An apparatus for cutting vegetation and the like, comprising:

(a) a head member arranged for rotation about an axis generally perpendicular with a cutting plane;

(b) driving means for rotating said head member;

(c) at least one spool member containing a coiled portion of a flexible non-metallic line member and each said spool member mounted for rotation within said head member;

(d) said head member having for each line member a line member exit provided therein at a location spaced from the axis of rotation;

(e) feed means adapted for feeding an uncoiled portion of said line member from each said spool member outwardly from said line member exit into the cutting plane by the rotation of each said spool member within said head member and the feeding of said line members being assisted by centrifugal forces generated by rotating said head member, and said feed means including complementary toothed surfaces on each said spool member and head member with said complementary toothed surfaces controlling angular movement of each said spool member to a predetermined angular displacement within said head member;

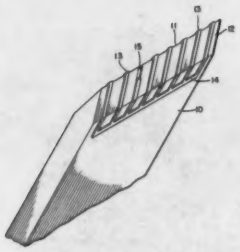
(f) actuating means for selectively placing said feed means in response to an actuating signal into an operate condition by moving said complementary toothed surfaces into engagement while complementary locking surfaces provided on each said spool member and head member are moved out of engagement to rotate each said spool member within said head member for feeding each said line member from said feed means outwardly from one of said line member exits; and

(g) restoring means for returning said feed means into a locked condition for holding each said spool member against rotation by moving said complementary toothed surfaces out of engagement while moving said complementary locking surfaces into engagement thereby securing each said line member against additional feeding from said line member exit upon a substantially certain discrete length of each said line member being extended from each said line member exit responsively to said actuating signal.

4,211,006
GUARDED RAZOR BLADE

Sami A. Halaby, Trumbull, and Edward S. Caco, Danbury, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jan. 2, 1979, Ser. No. 411
Int. Cl.[2] B26B *21/54*
U.S. Cl. 30—346.55 15 Claims

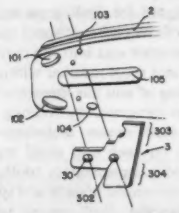


1. A razor blade having a sharpened edge, flanking surfaces on either side of said edge extending rearwardly therefrom, and a plurality of small guard elements fixedly deposited in guard seats recessed in said blade, said guard seats being located at spaced intervals along said edge and extending rearwardly from said edge in at least one said surface and serving to securely retain said elements, said guard elements extending upwardly from said guard seats to beyond at least one of said edge and said surfaces.

4,211,007
CHAIN SAW GUIDE BAR AND SAWDUST PLATE

Earl W. Gibson, Rte. 5, Box 69, Lucedale, Miss. 39542

Filed Feb. 16, 1979, Ser. No. 12,898
Int. Cl.[2] B27B *17/12*
U.S. Cl. 30—383 4 Claims

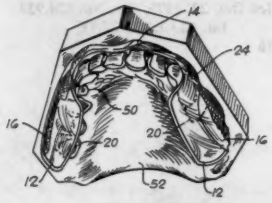


1. In a power chain saw including:
a guide bar having a guide groove therearound for receiving and guiding a cutting chain, said guide groove having sidewalls on both sides thereof,
a chassis said chassis having bolts therein to which said guide bar is secured, and
lubricating means in said chassis for supplying a lubricant into said guide groove of said guide bar,
an improvement comprising:
an improved guide bar having at the rear portion thereof at least one sawdust kick-out hole extending completely through said sidewalls and said guide groove and a plurality of lubricating holes extending perpendicularly through said sidewalls and said guide groove, said lubricating holes being countersunk at the outer ends thereof, and at least one of said lubricating holes being in communication with said lubricating means, whereby lubricant from said lubricating means is delivered into said guide groove through said lubricating holes; and
a bar plate adapted to be positioned adjacent said guide bar and attached to said chassis on said bolts connecting said guide bar to said chassis, said bar plate spacing said guide bar from said chassis, and said plate covering said lubricating holes not in communication with said lubricating means.

4,211,008
ORAL DEVICE

Martin D. Lerman, 144 Ravine Dr., Highland Park, Ill. 60035

Filed Oct. 20, 1978, Ser. No. 952,943
Int. Cl.[2] A61C *7/00*
U.S. Cl. 433—229 10 Claims



1. A device adapted to be placed in the human mouth for treating among other things temporomandibular joint dysfunctions comprising: an enlongated, flexible body having a continuous fluid-containing passage therein, said body including occlusal portions at the extremities thereof adapted to be positioned between the posterior teeth on each side of the mouth, the fluid-containing passage of the body being enlarged along substantially the entire length of the occlusal portions to provide occlusal pressure responsive means in the body for hydrostatically compensating for differences in pressure resulting from occlusal forces applied thereto by the posterior teeth of the mouth, and a labial portion for the body having a fluid-containing passage in communication with the enlarged fluid-containing passage in each of the occlusal portions of the body, said labial portion being joined at its ends to the forward end of each of the occlusal portions of the body and extending outwardly and laterally thereof, said labial portion being shaped to enable it to be comfortably received along the labial regions of the mouth, the fluid-containing passage of the labial portion being of reduced cross-section along substantially the entire length thereof to enable the labial regions of the mouth to easily conform to the labial portion of the body while permitting ready flow of fluid between the occlusal portions of the body to be achieved whereby any differences in the occlusal forces exerted by the posterior teeth can be readily hydrostatically equalized.

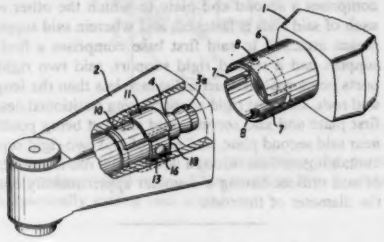
4,211,009
DENTAL HANDPIECE

Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., Besancon, France

Filed Jan. 5, 1978, Ser. No. 867,099
Claims priority, application France, Feb. 3, 1977, 77 04027
Int. Cl.[2] A61C *1/10*
U.S. Cl. 433/126 11 Claims

1. A dental handpiece comprising a rear portion and a front portion, and means for coupling said portions to each other, said coupling means comprising a female member secured to one of said two portions and comprising a socket having a pair of longitudinal slots opening to the free end of said socket, with arcuate wall portions between said slots and inwardly facing recesses in said wall portions spaced from the free end of said socket, and a male member secured to the other of said two portions and comprising a pair of resilient arms positioned to

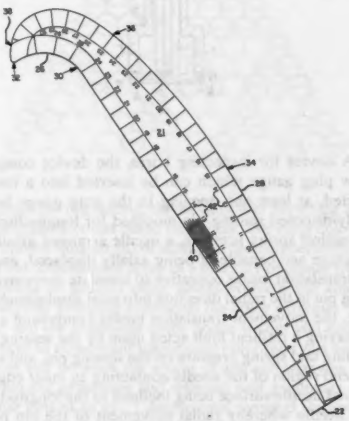
be received in said slots of said socket and a radially outwardly projecting protuberance on each of said arms positioned to be received in said recesses of said socket when said male member is rotated with respect to said female member, said resilient arms being flexible in a radial direction to press said protuberances into said recesses, whereby said female member and male member are coupled with one another by inserting said arms of said male member into said slots of said socket and then rotating said male member relative to said female member to bring said protuberances into said recesses.



4,211,010
MULTIPLE-CURVED FASHION DESIGN TOOL

Roger W. Burke, 200 SW. Market St., Suite 961, Portland, Oreg. 97201, and Sheila T. Boone, 1129 SE. 34th, Portland, Oreg. 97204

Filed Aug. 4, 1978, Ser. No. 930,897
Int. Cl.[2] A41H *1/00*
U.S. Cl. 33—11 6 Claims



1. A multiple-curved fashion design tool for adapting both ready-made and home-sewn articles of clothing to particular contours and configurations of a particular subject comprising:

(a) an article of substantially transparent plastic material having an irregular elongate outer configuration, a predetermined thickness and opposing major faces;

(b) each major face being characterized by having a substantially linear end, an upper perimeter being substantially linear for substantially two-thirds its length beginning at the linear end, and thereafter curing upwardly for the remainder of its length thereby defining an inner curvature, and a lower perimeter which curves outwardly downward from the linear end for substantially about one-half its length, thereafter curves inwardly until it reaches the maximum tool length and thence defines an arc one end of which substantially converges with the upper perimeter thereby defining an outer curvature and providing the tool with an approximated substantially semi-circular end;

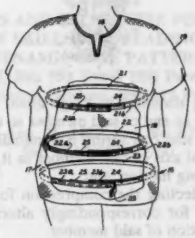
(c) means defining regularly spaced apart numerical indices at predetermined locations arranged substantially all along both the upper and lower perimeters of each major face thereby defining means for performing linear measurements with the tool; and

(d) means defining thereon a grid pattern correlated to said numerical indices, the grid pattern extending substantially all along the upper and lower perimeters of each major faces.

4,211,011
SELF MEASURING GARMENT ASSEMBLY

Ilamae W. Jacobson, 316 A Trenton La., Minneapolis, Minn. 55441

Filed May 7, 1976, Ser. No. 684,102
Int. Cl.[2] A41H *1/02*
U.S. Cl. 33—15 6 Claims



1. A garment assembly specifically constructed for regular use by a wearer and indicating to only the wearer the wearer's measurements whenever the garment is put on, the garment assembly comprising,

a garment for surrounding a portion of the wearer's body,

at least one elongated body surrounding measuring strip, having portions thereof attached to an interior surface of said garment at the elevation of the circumferential portion of the body to be measured,

said strip including at least one normally free end portion with connecting means for connection to the other end in overlapping body surrounding relation,

said free end portion being calibrated with measuring indicia on a surface not exposed to others to automatically indicate the circumferential measurement of the selected body portion whenever the garment is put on.

4,211,012
ELECTRIC-SIGNAL CONTROLLED HAND-HELD PRINTER

Harold G. Alles, Bridgewater, and Peter S. Kubik, South Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 23, 1978, Ser. No. 889,267
Int. Cl.[2] B41J *3/04;* G01D *15/24*
U.S. Cl. 33—18 R 3 Claims

1. An electrical signal responsive printer for marking information characters represented by received electric signals on a predetermined surface as said printer is moved across such surface, said printer comprising

a marking device,

electromagnetic motor means for moving said device to trace a recurrent pattern in a plane parallel to the plane of said surface, said motor means including means for generating an alternating magnetic field, and a magnetic mem-

ber coupled to said marking device and mounted in said field to be driven thereby in linear reciprocating motion,

means, responsive to said received electric signals, for actuating said device into or out of marking engagement with said surface to interrupt selectable parts of successive markings of said pattern on said surface for thereby forming said characters, and

means for limiting the extent of said reciprocating motion, such limiting means comprising

a coil spring disposed in longitudinal compression and coupled to an end of said member so that the longitudinal axis of said coil spring is nominally colinear with a longitudinal axis of said member as it is pivoted in said reciprocating motion, and

means for selecting the compression force exerted upon said string for correspondingly altering the extent of pivotal motion of said member.

4,211,013

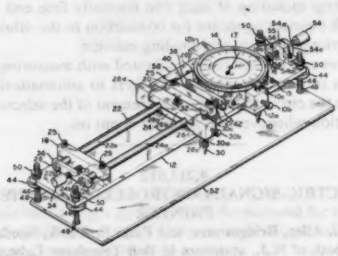
GAUGE

Clarence R. Bresson, and William E. Thornberry, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 12, 1978, Ser. No. 941,696

Int. Cl.[2] G01B 5/00

U.S. Cl. 33—147 R **9 Claims**



1. A gauge comprising:

(a) a micrometer having a plunger which has a first end, said micrometer being mounted in a fixed position on a first base;

(b) a first probe mounted in a fixed position with respect to said micrometer;

(c) a second probe adjustably mounted on a second base, said second base being movable with respect to said micrometer and with respect to said first probe and said second base being slidably mounted to a supporting means which is attached to said first base, said second base having a first end and a second end, wherein the first end of the plunger of said micrometer can be positioned against said first end of said second base so that a change in the position of said second probe is measured by said micrometer;

wherein said second base comprises at least two parallel rods, wherein said first end of said second base comprises a first end plate to which one end of each of said rods is fastened, wherein said second end of said second base comprises a second end plate to which the other end of each of said rods is fastened, and wherein said supporting means attached to said first base comprises a first rigid support and a second rigid support, said two rigid supports being spaced apart a distance less than the length of said rods, said first rigid support being positioned near said first plate and said second rigid support being positioned near said second plate, and each of said two rigid supports containing orifices through which each rod is passed, each of said orifices having a diameter approximately equal to the diameter of the rods.

4,211,014

DEVICES FOR INSPECTING BORES

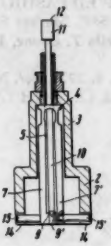
Hermann Költgen, Schottener Weg 6, D-61 Darmstadt, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,466

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1977, 7734751[U]

Int. Cl.[2] G01B 5/12

U.S. Cl. 33—178 R **9 Claims**



1. A device for inspecting bores, the device comprising a hollow plug gauge which can be inserted into a bore to be inspected, at least one opening in the plug gauge housing a radially-disposed sensing pin mounted for longitudinal movement against spring pressure, a needle arranged axially in the plug gauge and capable of being axially displaced, and movement translation means operative to translate movement of the sensing pin in the radial direction into axial displacement of the needle, the movement translation means comprising a sensing head having a resilient limb acted upon by the sensing pin and providing said spring pressure on the sensing pin, and a surface on an end region of the needle contacting an inner edge of the limb, said needle surface being inclined to the longitudinal axis of the needle whereby radial movement of the pin produces displacement of the needle, the needle having a second and end surface capable of being contacted, in use, by a measuring pin of an indicator device to enable indication of the axial position of the needle.

4,211,015

METHOD AND APPARATUS FOR MAKING NOVEL PARTICULATE COMPOSITIONS

Thomas H. Adams, Mission Viejo; James P. Beck, Garden Grove, and Robert C. Menson, Newport Beach, all of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

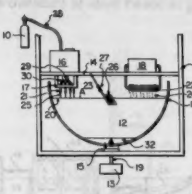
Filed Jan. 18, 1978, Ser. No. 870,537

Int. Cl.[3] F26B 5/06

U.S. Cl. 34—5 **25 Claims**

5. A method for producing a quality control material, com-

prising passing a continuous stream of said material through a gaseous zone and into a freezant liquid to form frozen particles



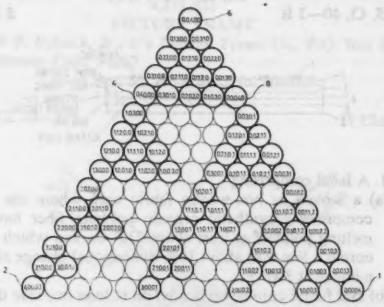
of said material, recovering said lyophilizing the particles, filling a predetermined mass of the particles into a container and hermetically sealing said container.

4,211,016

METHOD AND CHART FOR ORGANIZING AND PRODUCING COLORS

Meir Eldar, 47 Uziel St., Jerusalem, Israel

Filed Jan. 26, 1979, Ser. No. 7,004
Claims priority, application Israel, Jan. 27, 1978, 53906
Int. Cl.[2] G09B *19/00*
U.S. Cl. 35—28.3 **8 Claims**



2. A chart for organizing, developing and depicting a multipigment scale of colors based on at least five basic colors (m) and any chosen number (n) of subdivisions therebetween comprising a two dimensional array of a plurality of planar triangular groupings of distinct color points wherein the apices of each triangular grouping represents the color extremes of said grouping and the remaining color points within said grouping are arranged in equidistant transitional color intervals between said apices and between the apices of any sub-triangles definable within the groupings and wherein said groupings represent planar cuts of an m−1 dimensional pyramid the apices of which pyramid represent the basic colors chosen.

4,211,017

FOOTBALL TRAINING AID

Michael R. Meatheringham, 955 Stovall Blvd., N.E., Atlanta, Ga. 30319

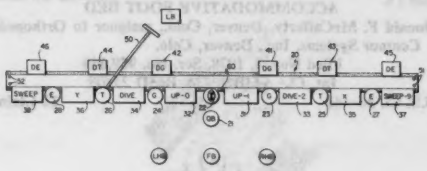
Filed Nov. 16, 1978, Ser. No. 961,278
Int. Cl.[2] A63B *69/00*
U.S. Cl. 35—29 R **6 Claims**

1. A device for instructing the playing of football comprising:

an elongated strip of material which represents the line-of-scrimmage and includes first securing means along at least a portion thereof;

a plurality of player mats which indicate the particular offensive and defensive players and which include second securing means along at least a portion thereof;

said material representing a line-of-scrimmage being adapted to removably secure the plurality of player mats by interreaction of the first and second securing means; and



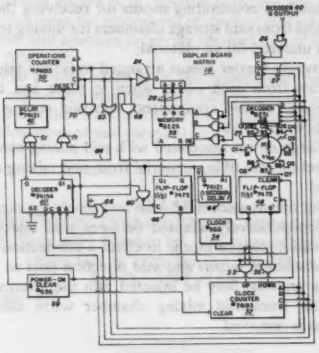
said defensive and offensive player mats being readily adjustable relative to the material representing the line-of-scrimmage to indicate a plurality of offensive and defensive formations.

4,211,018

APPARATUS AND PROCEDURE FOR TESTING PREREQUISITE SKILLS FOR READING BY USE OF A DYNAMIC LINE PATTERN

Robert R. DeVoid, Box 593 Tower Hill Farm, Hinsdale, N.H. 03451, and William A. Hodson, Box 413 Putney, Putney, Vt. 05346

Filed Aug. 26, 1977, Ser. No. 827,876
Int. Cl.[2] G09B *17/00*
U.S. Cl. 35—35 R **24 Claims**



1. Apparatus for testing the prerequisite reading capabilities of a subject comprising;

means defining a display,

control means coupled to the display for selectively generating on the display a plurality of different moving line patterns, one pattern at a time, with each pattern comprising at least one line segment,

said control means comprising a control member manually controlled by an operator disposed remote from the display but in a position to note the accuracy of the reproduction by the subject,

like ones of said line patterns being consistently generated from one display time to the next,

said line patterns adapted to be copied by the subject being tested to assess prerequisite reading capabilities,

means used by the subject disposed separate from the display, in non-overlying relationship with the display, and upon which the subject, after observation of the moving line pattern, copies the line pattern,

and means for correlating the skills of the subject to repro-

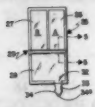
duce the line pattern with prerequisite capabilities for reading of the subject.

4,211,019

ACCOMMODATIVE FOOT BED

Donald F. McCafferty, Denver, Colo., assignor to Orthopedic Contour Systems, Inc., Denver, Colo.

Filed Nov. 8, 1978, Ser. No. 958,549
Int. Cl.[2] A43B *13/38*; B65D *25/08*
U.S. Cl. 36—43 **12 Claims**



1. An accommodative foot bed system, comprising:

a flexible bladder configurated as an innersole with an injection port on one edge;

a resin pack including:

a pair of storage chambers for containing respective components of a two component plastic resin system;

a flexible mixing chamber associated with said storage chambers constituting means for receiving the components from said storage chambers for mixing to produce an uncured filling material;

removable barrier means arranged to isolate said components from each other when in place and to permit passage of said components into said mixing chamber when removed;

discharge means associated with said mixing chamber for ejecting said filling material from said mixing chamber; and

sealing means associated with said discharge means; and

means cooperatively adapted between said injection port and said discharge means to effect a connection between said discharge means and said injection port so that said filling material may be injected into the interior of said bladder from said mixing chamber when said sealing means is removed.

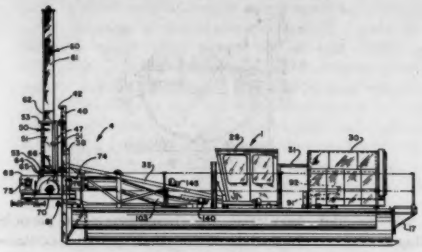
4,211,020

VERTICALLY ADJUSTABLE MAST ASSEMBLY FOR A DREDGE

Malcolm L. Holekamp, 344 Gray Ave., St. Louis, Mo. 63119

Division of Ser. No. 739,541, Nov. 8, 1976, Pat. No. 4,170,079.
This application Jul. 17, 1978, Ser. No. 924,947
Int. Cl.[2] E02F *3/90*
U.S. Cl. 37—65 **4 Claims**

1. In a vessel-mounted dredging device in which material freed by revolving cutters is pumped through a suction mouth and discharge pipe to a place remote from said cutters, the improvement comprising a vertically adjustable mast, a platform mounted on and supported by a lower end of said mast, a pump mounted on said platform and cutters carried by and beneath said platform, and a mast guide carrying said mast, said mast guide including a carriage, vertical carriage guide posts mounted on said vessel and providing a support for said carriage, each of said carriage guide posts having a track and said carriage having rollers mounted in longitudinally and transversely spaced relation on said carriage and running on said tracks and an elongated bearing, carried by said carriage, in



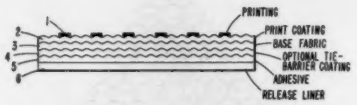
which said mast is slidably journalled for movement up and down with respect to the vessel.

4,211,021

ENGINE COMPARTMENT LABEL

Lawrence Amprim, Farmington, Mich., and Frederick P. Williams, Kettering, Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Feb. 15, 1978, Ser. No. 878,097
Int. Cl.[2] A44C *3/00*
U.S. Cl. 40—2 R **5 Claims**



1. A label comprising

(a) a woven or non-woven fabric core where the fabric comprises a synthetic organic polymer fiber having a melting point of at least about 230° C., and which fabric core has less than about 10% dimensional change after 20 minutes at 300° F.,

(b) said fabric core being coated on at least one side thereof with an adherent film of an ink receptive coating penetrable by a non-volatile printing ink which dries by penetration,

(c) said fabric core being coated on the other side thereof with an adherent layer of an initially tacky pressure sensitive thermosetting acrylic adhesive which maintains significant bond strength at temperatures between about 300° F. and 400° F.

4,211,022

PICTURE FRAME

Nicholas Angelakos, 676 Sinclair Ave., Staten Island, N.Y. 10312

Filed Sep. 29, 1978, Ser. No. 947,140
Int. Cl.[3] G09F *1/12*
U.S. Cl. 40—152.1 **8 Claims**

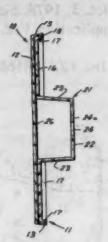
1. A picture frame comprising

(a) a front member including a main transparent panel and a peripheral lip projecting rearwardly from said panel, and

(b) a rear member including a main panel and a peripheral lip projecting rearwardly from said rear member panel, said rear member lip being shaped and sized to frictionally engage said front member lip so as to hold the front and rear members together, said members being separable to permit a picture to be placed between said main panels, and

(c) a support element projecting rearwardly from said rear member main panel beyond the rear edges of said peripheral lips, said support element having a mounting panel for

mounting the picture frame on a wall of a room, said mounting panel being spaced behind said rear member main panel a distance at least twice as great as the depth of



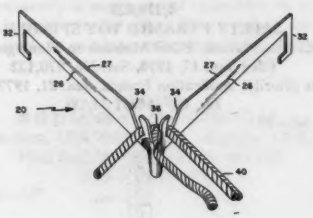
the peripheral lip of said front member, and the area of said mounting panel being no greater than about 25% of the area of said rear member main panel.

4,211,023

PICTURE FRAME

Joseph P. Eubank, Jr., c/o Eubank Frame Co., P.O. Box 582, Inverness, Calif. 94937

Filed Sep. 20, 1978, Ser. No. 944,088
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—155 11 Claims



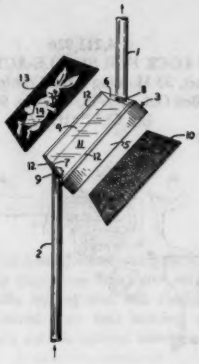
1. A picture frame comprising:
a corner clip for each corner of a rectangular picture assembly and adapted to be engaged therewith,
each corner clip comprising a pair of legs extending at right angles to each other and joined at a vertex portion with each leg extending from said vertex portion along the back of the picture assembly to an end portion,
said end portion of each leg extending around an associated edge of the picture assembly to the front thereof for engaging the same,
each leg and associated end portion being comprised of a flat thin strip of material extending in a plane perpendicular to the picture assembly, the dimension of said strip in said plane being several times greater than the thickness of said strip,
said end portion of each leg presenting the edge of said thin strip of material to the front of the picture assembly,
each corner clip having a cord engaging means, and
a cord means extending between each of said corner clips and engaging the cord engaging means thereof to urge said corner clips toward a central location of the picture assembly with said end portion of each leg of each corner clip being urged into securing engagement with an associated edge of the picture assembly.

4,211,024

MAGIC DRINKING STRAW

Joe H. Nickell, 377 Prestonsburg St., West Liberty, Ky. 41472

Filed Mar. 22, 1978, Ser. No. 889,094
Int. Cl.[2] G09F *19/00;* A47G *21/18*
U.S. Cl. 40—406 3 Claims



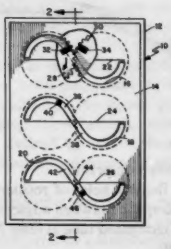
1. A magic drinking straw comprising:
two open-ended hollow tubes, each having first and second ends;
a hollow enclosed connecting member having a rear wall of black or other dark-color material, and opposed thereto a front wall of transparent material, said connecting member having apertures in opposite ends, the top said aperture receiving the second end of the first said tube, and the bottom said aperture receiving the first end of the second said tube; and
a pictorial pattern borne upon said transparent front wall of said connecting member, said pattern being rendered in black or other dark-color for its negative areas, and the positive areas of said pictorial pattern remaining transparent.

4,211,025

BIORHYTHM CYCLE DISPLAY APPARATUS

George F. Metz, 4712 Berwick Dr., San Diego, Calif. 92117

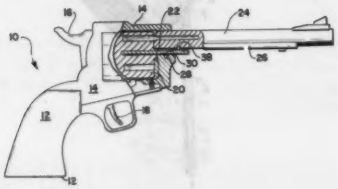
Filed Oct. 6, 1978, Ser. No. 949,142
Int. Cl.[2] G09F *11/04*
U.S. Cl. 40—495 8 Claims



1. A time based multicycle display apparatus comprising:
a housing having at least one transparent display window having a shape substantially that of a period of a sine curve arranged to designate the extremes of a cycle;
a pair of rotatable discs disposed in a common plane on parallel axis drivingly connected to rotate together;
indicia means on each of said discs positioned to cooperate within said window to be visible therein to indicate a time related variable of said cycle between the extremes of said

cycle, one of said indicia means indicating one portion of said cycle and the other of said indicia means indicating another portion of said cycle.

4,211,026
CENTER PIN LOCK FOR SINGLE-ACTION REVOLVER
Austin F. Behlert, 33 Herning Ave., Cranford, N.J. 07016
Filed Oct. 2, 1978, Ser. No. 947,628
Int. Cl.[2] F41C *1/00*
U.S. Cl. 42—59 **9 Claims**

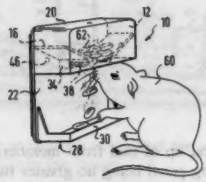


1. A single-action revolver comprising:
a frame including a cylinder frame and a cylinder to be mounted in said cylinder frame, and a barrel removably connected to said cylinder frame;
a center pin extending through said cylinder frame for rotatably mounting said cylinder within said cylinder frame;
first means for removably retaining said center pin in engagement with said cylinder frame;
and second means for removably retaining said center pin in engagement with said cylinder frame including means interlocking said center pin and said barrel.

4,211,027
ELONGATED FLEXIBLE FISHING LURE WITH HELICAL SHAPE
Francis N. Viscardi, 6109 Wheatland Rd., Baltimore, Md. 21228
Filed Oct. 11, 1978, Ser. No. 950,408
Int. Cl.[3] A01K *85/00*
U.S. Cl. 43—42.24 **4 Claims**

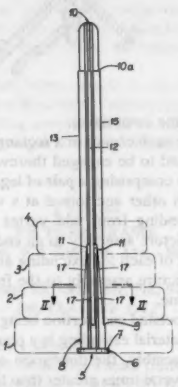
1. A fishing lure comprising:
an elongated flexible helix of resilient material having substantially no space between adjacent coils of the helix and defining an elongated tube at least 7" long curved along its entire length;
a swivel connector projecting from one end of the tube for connection to a fishing line;
a hook projecting from the other end of the tube, the hook including a barbed end;
a metallic wire extending within the tube for a substantial portion of the length of the tube and connecting the swivel connector to the hook; and
camouflage means also projecting from said other end of the tube.

4,211,028
RODENT POISON DISPENSER WITH PROTECTIVE CLOSURE PLATE OF ATTRACTIVE ODOR OR TASTE
Fritz Roberling, Buhnstrasse 82, Vlotho, Fed. Rep. of Germany
Filed Oct. 3, 1978, Ser. No. 948,627
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745407
Int. Cl.[2] A01M *25/00*
U.S. Cl. 43—131 **10 Claims**



1. Rodent poison dispenser comprising a housing with an upper chamber suitable for holding poison bait, which is separated by a separating wall from a lower chamber into which rodents can enter, wherein the separating wall has an opening which is capable of being closed by a consumable protective plate of an odor or taste attractive to rodents, the poison bait is is supported by the consumable protective plate and when the rodent eats through the protective plate the poison falls through the opening, wherein the separating wall is inclined downwardly to the opening and wherein there are provided at sides of the opening guiding means for insertion of the protective plate.

4,211,029
SAFETY PYRAMID TOY SPINDLE
Michel Cretin, Maisod, 39260 Moirans-en-Montagne, France
Filed Jan. 17, 1978, Ser. No. 870,122
Claims priority, application France, Jan. 21, 1977, 77 02339
Int. Cl.[2] A63H *33/00*
U.S. Cl. 46—17 **8 Claims**



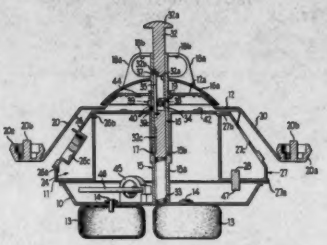
1. A safety toy comprising a base having a central hole with an annular recess around said hole on the lower face of said base, and a flexible spindle of non-toxic resilient material snugly received in said hole of the base and having a flange received in said recess, said spindle having a rounded tip and tapering from said base to said tip, with a cross sectional shape comprising a central core portion and a plurality of arms radiating from said core portion, said arms having rounded extremities, the flexibility of said spindle being sufficient to permit

bending the tip of said spindle down to the level of the base and the resiliency of the material being sufficient to cause said spindle to resume its initial position substantially normal to the base when released.

4,211,030
SPACE TOY

Howard J. Morrison, Deerfield; Denise Gardner, Downers Grove, and Palmer J. Schoenfield, Evanston, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,830
Int. Cl.[2] A63H *1/06*
U.S. Cl. 46—67 **14 Claims**

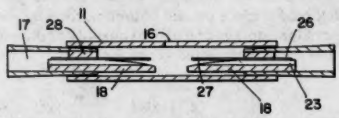


1. A toy space vehicle comprising a base, a vehicle body rotatably supported on said base, a carrier rotatably supported on said base, said body and said carrier being independently rotatable about a common axis, a manually operable reciprocator movable in two directions, and drive means responsive to movement of said reciprocator in one direction for rotating said body relatively to said base and responsive to movement of said reciprocator in the other direction for rotating said carrier relatively to said base and independently of said body.

4,211,031
WILD GOOSE AND DUCK CALL

Nate J. Gambino, 1224 Westland Dr., Modesto, Calif. 95350

Filed Sep. 29, 1978, Ser. No. 947,084
Int. Cl.[2] A63H *5/00*
U.S. Cl. 46—177 **9 Claims**



1. A bird call comprising a hollow tubular body open at both ends, a blowhole in said tubular body intermediate of said ends, a pair of reed assemblies, each disposed in one of said ends of said tubular body, each of said reed assemblies including a reed having a freely vibrating end extending inwardly into said tubular body and adapted to be actuated by an airstream introduced through said blowhole.

4,211,032
TOY HOOP DEVICE

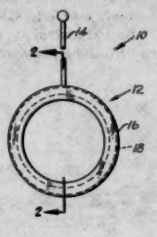
Ross Robinett, 882 Summerland Ave., San Pedro, Calif. 90731

Filed Sep. 1, 1978, Ser. No. 938,852
Int. Cl.[2] A63H *33/02*
U.S. Cl. 46—220 **2 Claims**

1. A toy hoop device, which comprises:

(a) a hoop having an outer peripheral surface adapted for rolling along another surface and means defining a central channel formed around said peripheral surface, and inwardly therefrom;

(b) a bearing cage displaced in said central channel for rotational movement relative to said hoop, an outer surface of said cage being recessed below said outer peripheral surface, said cage including means defining at least one recess formed into the cage from said outer surface; and

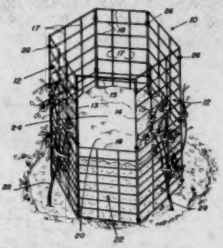


(c) a guide handle having one end configured for being releasably received into said bearing cage recess, to thereby enable a user to control movement of the hoop.

4,211,033
PLANT SUPPORT AND COMPOST ENCLOSURE

Charles J. Ringer, Long Lake, Minn., assignor to Judd Ringer Corporation, Eden Prairies, Minn.

Filed Dec. 18, 1978, Ser. No. 970,629
Int. Cl.[2] A01G *9/12*
U.S. Cl. 47—45 **6 Claims**



1. A combination plant support and compost enclosure apparatus comprising:

a plurality of substantially vertical rigid panels, each panel including a set of generally vertical spaced rods and a set of generally horizontal spaced rods, said rods being secured to each other at their junction points, one of said panels acting as a front panel and having vertical and horizontal rods omitted in the upper portion thereof to provide an opening therethrough, substantially larger than the opening defined by said vertical and horizontal rods for the introduction of compost into the enclosure; and

means pivotally connecting each said panel to adjacent panels to form a rigid structure that can stand without support and be collapsed to a substantially flat form.

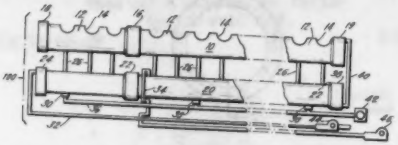
4,211,034
HYDROPONIC GROWING SYSTEMS

Barry J. Piesner, 1146 E. 23rd St., Brooklyn, N.Y. 11210

Filed Feb. 23, 1978, Ser. No. 880,692
Int. Cl.[2] A01G *31/02*
U.S. Cl. 47—62 **10 Claims**

1. A hydroponic growing system including, in combination, an elongated growing container constructed to hold a porous

solid growing medium wherein plant roots are to be disposed, said growing container provided with relatively extensive aperture means located at the upper surface of said growing container and through which plant foliage is to extend outside of said growing container, a separate supply tank constructed to hold a fluid growing solution, supply and drain tube means extending from said supply tank near the bottom thereof and outwardly from said supply tank into said growing container, and supply means connected to said supply tank, said supply means when activated furnishing pressurized air to said supply



tank to initially force a fluid growing solution from said supply tank upwardly through said tube means into said growing container and immediately thereafter supplying air which bubbles through a growing medium and growing solution in said growing container for a predetermined interval of time, said supply means when deactivated permitting growing solution in said growing container to flow through said tube means back to said supply tank, and means connected at the upper end of the supply and drain tube means for distributing air delivered through said tube means along the length of said growing container.

4,211,035

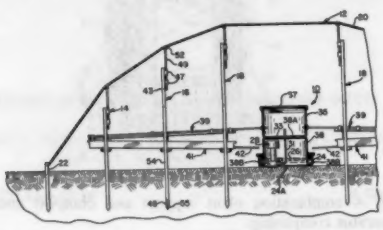
HYDROPONIC GARDENING APPARATUS

William Small, 7256 South Coles, Chicago, Ill. 60649

Filed Jul. 27, 1978, Ser. No. 928,752

Int. Cl.[2] A01G 9/00

U.S. Cl. 47—62 **10 Claims**



1. In hydroponic gardening apparatus, the combination comprising:

means defining a lower reservoir containing a liquid nutrient;

means defining an upper reservoir;

pumping means for flowing liquid nutrient from said lower reservoir to said upper reservoir;

a plurality of opened top containers having growing media disposed in the interior thereof and being adapted to support and to nourish plants therein;

a plurality of inclined feed conduits connected in fluid communication with the interior of said upper reservoir above said containers for guiding under the force of gravity liquid nutrient from said upper reservoir to said containers;

return conduit means connected in fluid communication with said containers for guiding liquid nutrient therefrom back to said lower container;

a shelter construction having a series of upright posts arranged in concentric circles and directly on the top portions of at least some of said posts supporting a translucent cover, said conduit means and said containers being supported above the ground by said posts, each one of said conduit means and each one of the elongated containers being supported by a plurality of said posts disposed on different ones of said circles; and

said plurality of containers being similar to one another and being arranged in a spaced-apart manner, said plurality of similar feed conduits being disposed above individual ones of said containers.

4,211,036

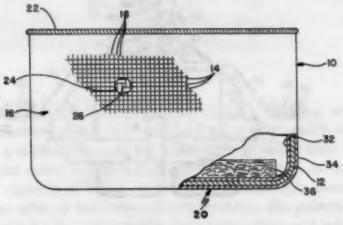
PLANTER BASKET

Shirley R. Dalitz, 1828 Millbank Rd., Leucadia, Calif. 92024

Filed May 5, 1977, Ser. No. 793,919

Int. Cl.[2] A01G 9/02, 27/00

U.S. Cl. 47—66 **2 Claims**



1. An open-topped decorative basket having wall and bottom portions;

(a) said portions being constructed of linear elements in basketweave pattern with portions of said elements overlaid and with interstices defined between said elements in both said wall and bottom portions;

(b) a sealing material coating said elements and completely filling said interstices;

(c) said material being transparent and therefore substantially invisible so that the appearance of the decorative basket, with the basketweave pattern and interstices as such, is retained;

(d) said material being waterproof so that said elements are preserved against deterioration and the basket is waterproofed as a container for use as a planter;

(e) said bottom portion having an essentially porous structure attached on the inside of said bottom portion and being held in place on said bottom portion by said sealing material for storage of a limited quantity of drainage water within the waterproofed container.

4,211,037

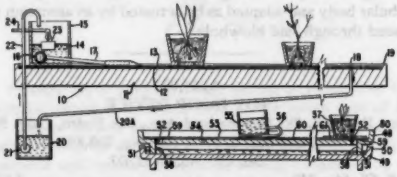
METHOD AND APPARATUS FOR IRRIGATING CONTAINER-GROWN PLANTS

Evert S. Green, 14 Kenneth Ave., N. Bellmore, N.Y. 11710

Filed Mar. 12, 1979, Ser. No. 19,563

Int. Cl.[2] A01G 27/00

U.S. Cl. 47—80 **24 Claims**



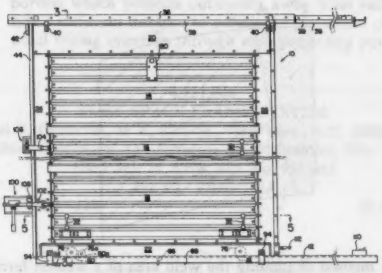
1. In a method of irrigating with an aqueous liquid soil within a plant container through an opening in the bottom thereof that rests on a capillary sheet having capillary openings

therein that are about 0.045 to about 0.145 inch in diameter by capillary travel upwardly through said capillary openings and said opening in the bottom of said container, the improvement of which comprises feeding water into the interface between an undersurface of said capillary sheet that is wettable and that is in face-to-face unbonded contacting relation with an essentially continuous and substantially smooth wettable upper surface presented by a support bed for said plant container with attendant lateral spreading while confined in said interface to an area of said capillary sheet underneath a plant container the bottom of which is in contacting relation with the upper surface of said capillary sheet and with further travel through capillary openings in said area of the capillary sheet and thence through said opening in the bottom of the plant container and into soil within the container.

4,211,038
ROLLER DROP DOOR

Glenn L. Wright, Canfield, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Apr. 20, 1978, Ser. No. 895,987
Int. Cl.² E05D *15/56*
U.S. Cl. 49—234 **2 Claims**



1. In a railway house car having a door supporting track on a car side beneath a door opening, a door formed with a lower edge surface for support of said door on the top of said track in engagement with said track when said door is in position to close said opening,

said lower edge surface extending substantially throughout the width of said door and having a plurality of at least three intermediate openings with portions of a plurality of at least three longitudinally spaced rollers extending therefrom,

said track being in sealed contact with the car side beneath said door opening substantially throughout the length of said track and having a plurality of at least three corresponding intermediate copes of enlarged longitudinal dimension in the top of said track located to receive said rollers when said door is supported on said lower edge surface in position to sealingly engage said track to close and seal said opening,

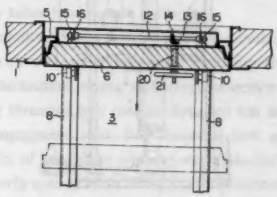
said copes' enlarged dimensions, during closing and just prior to the final movement of said door into position to close and seal said opening, permitting a final longitudinal sliding movement of said lower door edge surface on the top of said track to close and seal said opening, and during opening, permitting an initial relatively short longitudinal sliding movement of said lower door edge surface on said track to initially open said opening, and also permitting at least two of said rollers to engage the top of said track and support said door with the lower edge surface removed from said track for longitudinal movement when the door is in other positions on said track,

said lower edge surface being located so as to define the inwardmost portion of the door adjacent said track such that in the closed position of the door a seal is provided with said track and potential damage to said track tending to move it closer to said car side cannot clamp any portion of said door between said track and said car side and thereby hinder selective door movement.

4,211,039
DOOR ASSEMBLY

Genshi Taniwaki, Kumamoto, Japan, assignor to Kongo Co., Ltd., Japan

Filed May 17, 1978, Ser. No. 906,740
Int. Cl.² E05F *11/00*
U.S. Cl. 49—361 **12 Claims**



1. A vault door assembly of the type used for closing the opening to a bank vault, comprising guide means disposed so as to extend in a direction normal to the plane of the opening, a door for defining a closure for said opening, guide follower means connected to said door, said guide follower means being engaged with said guide means and being disposed to follow along said guide means, said door being displaceable relative to said opening by a force acting in a direction normal thereto to move said door to an open position spaced from said opening and in a plane parallel to the plane of said opening, and by an opposite force acting normal to said door to move said door to a closed position, whereby in said open position one can enter the vault through a space between said door and said opening and whereby the interior of the vault is blocked from view by said door in its open position, drive means operatively connected to said guide follower means for driving the follower means to effect normal displacement of said door relative to said opening along said guide means, said drive means including a driver rotatably journalled to said door, a drive shaft connected to said driver, a transmission having a driven shaft, means for coupling said drive shaft and said driven shaft, and means for coupling said driven shaft to said guide follower means.

4,211,040
PROCESS FOR MACHINING SILICON RODS AND TUBES BY ABRASION

Friedrich Steudten, Burghausen, and Franz Köppl, Altotting, both of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

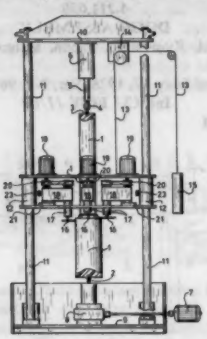
Filed Oct. 27, 1978, Ser. No. 955,429
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758887
Int. Cl.² B24B *5/04*
U.S. Cl. 51—42 **2 Claims**

1. Apparatus for machining silicon rods and tubes by abrasion, comprising:

a metal frame having an upper cover plate and a lower base plate, and an upper and lower holder, disposed one above the other and secured, respectively, to said cover plate and said base plate, for accommodating a generally cylindrically silicon workpiece in a vertical orientation; and

a vertically-movable tool carriage, supported on said frame, having a plurality of tools mounted thereon, for machining said workpiece, said tools being positioned on said carriage so as to be uniformly arranged about the circumference of said workpiece, so that the contact pressures of each tool are mutually substantially compensated, said

tool carriage also having a ring rotatably mounted thereon which is coaxially disposed relative to said workpiece, a plurality of rocker arms each of which has a head end portion and a base end portion and which is pivotable about its base end portion for pivotable movement in a



horizontal plane generally towards and away from the axis of the workpiece and a plurality of joints which are adjustable in length and which couple said rocker arms to said ring and wherein said tools each include a grinding disc which is attached to the head end portion of one of said rocker arms.

4,211,041

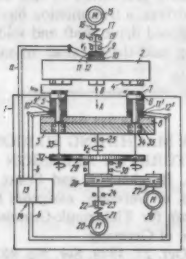
ROTOR-TYPE MACHINE FOR ABRASIVE MACHINING OF PARTS WITH FERROMAGNETIC ABRASIVE POWDERS IN MAGNETIC FIELD

Faddei J. Sakulevich, pereulok Dalny, 3; Lev N. Kravchenko, ulitsa Kalinovskogo, 72, kv. 17; Lev M. Kozhuro, ulitsa Instrumentalnaya, 4, kv. 33, and Vladimir A. Shimansky, ulitsa Knorina, 10a, kv. 19, all of Minsk, U.S.S.R.

Filed Jun. 16, 1978, Ser. No. 916,256

Int. Cl.[2] B24B *7/04*

U.S. Cl. 51—131.3 **2 Claims**



1. A rotor-type machine for abrasive machining of the surfaces of parts with ferromagnetic abrasive powders in a magnetic field created by two electromagnetic systems, comprising: an inductor constituting one of said two electromagnetic systems, having an even number of alternating-polarity poles and installed rotatably around its axis to define a first rotation plane; the coils of said inductor installed on its poles; a rotor constituting the other one of said two electromagnetic systems, installed rotatably around its axis so as to define a second rotation plane parallel to but displaced from said first rotation plane, and having an even number of alternating-polarity poles which is equal to the number of poles of said inductor, the poles of said inductor and said rotor being counteropposed to one another to define an air gap therebetween; the coils of said rotor being installed on its poles; a workpiece secured on the pole of said rotor and located in the air gap between the counteropposed poles of said inductor and said rotor, and filled with a magnetic abrasive powder which creates a cutting "brush" on the poles of said inductor; said poles having a face surface corresponding to the profile of the surface being machined, the distance between the adjacent poles being greater than the size of the air gap; a power pack connected with said coils of said inductor and rotor; a drive intended to rotate each pole of said rotor around its axis; a control unit connected to said power pack and coupled with said coils of said inductor and with said coils of said rotor for controlling said coils so as to ensure that each pair of the counteropposed poles has a different polarity in the course of workpiece machining.

4,211,042

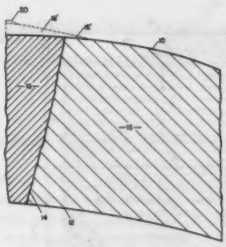
CONTROLLED WELD AREA GRINDING TO PREVENT THE INITIATION OF INTERGRANULAR CORROSION

Harry E. Deverell, Natrona Heights, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1978, Ser. No. 972,557

Int. Cl.[2] B24B *1/00*

U.S. Cl. 51—281 R **4 Claims**



1. A method of treating the weld area of a welded ferritic stainless steel article to increase the resistance to intergranular corrosion comprising the step of grinding the torch side surface of the welded article at a substantially uniform depth along the length of the weld after the material has solidified in the weld area, with a cross sectional dimension of the grind extending beyond the weld-base metal interface on both sides of the weld area, and with the depth of grind being uniformly controlled within the range of from at least 0.0005 inch as measured at the weld-base metal interface to less than 10% of the unground article thickness.

4,211,043

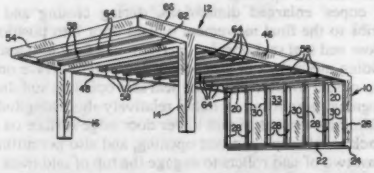
PRECAST CONCRETE BUILDING MODULE FORM

Jerry F. Coday, 3580 Eola Dr., N.W., Salem, Oreg. 97304

Filed Jan. 6, 1978, Ser. No. 867,452

Int. Cl.[2] E04B *1/342*; E04H *1/00*

U.S. Cl. 52—79.1 **7 Claims**



1. A building module comprising:

a precast monolithic concrete building element including an upright wall means, roof means projecting outwardly in a first direction from the upper end of said wall means and roof support means spaced from said wall means;

said wall means including a wall panel, said wall means also

including plural spaced apart generally parallel upright wall ribs projecting outwardly in said first direction from one surface of said wall panel and defining channel like recesses therebetween bounded by exposed concrete surfaces of said wall ribs and one surface;

said roof means including a roof panel having an inner end at the upper edge of said wall means and an outer end spaced from said wall means, said roof means also including plural spaced apart generally parallel roof ribs projecting outwardly in a second direction from a lower surface of said roof panel and defining channel like recesses therebetween bounded by exposed concrete surfaces of said roof ribs and lower surface of said roof panel;

a plurality of wall stud means of a nonconcrete structural material for supporting wall covering materials, each said wall stud means including an anchoring portion cast into the free side of an associated wall rib and a projecting portion which projects outwardly away from such free side a sufficient distance to permit the placement of electrical wiring openings through which projecting portion; and

a plurality of roof stud means of a nonconcrete structural material for supporting roof covering materials, each said roof stud means including an anchoring portion cast into the free side of an associated roof rib and a projecting portion which projects outwardly away from such free side a sufficient distance to permit the placement of electrical wiring openings through such projecting portion.

4,211,044

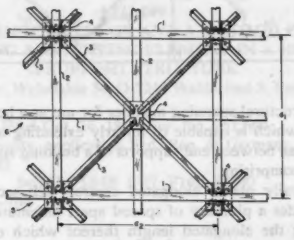
TUBE SPACE FRAME SYSTEM

Paul F. Gugliotta, 39 E. 20th St., New York, N.Y. 10003, and David Hoffmann, 117 Jefferson St., Milwaukee, Wis.

Filed Jul. 28, 1978, Ser. No. 928,942

Int. Cl.[2] E04B 7/18

U.S. Cl. 52—200 **21 Claims**



1. In a plural grid modular space frame system of the type including at least two uniform dimensioned substantially rectangular grid planar chord frames held apart and substantially parallel by diagonal struts, one frame being out of registration with the other frame by one-half grid dimension in each substantially rectangular direction so that each chord intersection point on one frame is substantially apart from and opposite an open center of a grid rectangle of the other frame, each of said diagonal struts being one of a group of four struts extending from each said chord intersection point on one frame to each of the four nearest chord intersection points bounding said grid rectangular of the other frame to form a grid module, the improvement comprising:

a plurality of continuous chords;

a plurality of tie chords, said tie chords and said continuous chords being disposed in two substantially uniform dimensioned substantially rectangular grid planar chord frames, in each one of which all of said chords lie in a single plane for disposing any associated chord forces in said single plane, said continuous chords extending in one direction of said substantially rectangular grid with said tie chords extending in the other substantially rectangular direction at an angle to said one direction, each of said tie chords being a substantially discontinuous chord and extending one grid dimension from the intersection point with one of said continuous chords to the intersection point with the next continuous chord, said tie chords and said continuous chords being comprised of elongated hollow substantially rectangular tubes having four substantially flat side walls;

a plurality of diagonal struts, each extending from one of said chord intersection points on one of said chord frames to one of the four nearest chord intersection points on the other of said frames, said diagonal struts being elongated hollow tubes having side walls; and

interconnection means for joining said continuous chords, said tie chords and said diagonal struts together at each of said intersection points, said interconnection means comprising threaded bolt means, threaded nut means threadably engageable with said threaded bolt means, and a plurality of bent plate connectors substantially uniformly modularly spaced apart along the longitudinal axis of each of said continuous chords throughout the length thereof and secured thereto at each of said interconnection points, each of said bent plate connectors being a substantially continuous member having a substantially straight portion secured to said continuous chord and a plurality of angulated portions extending therefrom to substantially define the planes of said diagonal struts in said space frame, said straight portion bearing against an external area of one of said flat side walls of each of said chords with said angulated portions being in load bearing relation with said struts, said bent plate connectors each having apertures through each of said portions within said load bearing area to receive said threaded bolt means, said continuous chords, said tie chords and said diagonal struts each having tube wall apertures, within said load bearing area alignable with said bent plate connector apertures for receiving said threaded bolt means disposed through said bent plate connector apertures, each of said threaded bolt means being disposed through said aligned bent plate connector and tube wall apertures and engaged with said threaded nut means so that each of said tie chords and diagonal struts is secured to said respective bent plate connector at each of said intersection points, said interconnection means further comprising means for fixedly securing each of said respective bent plate connector straight portions to said continuous chords at said intersection points, said continuous chords being concentrically loaded in said space frame and said substantially discontinuous tie chords being eccentrically loaded in said space frame, said continuous chords in said space frame having said bent plate connectors secured thereto being substantially stronger in compression and local bending than said substantially discontinuous tie chords in said space frame, said continuous chords being common for a plurality of said grid modules with said spaced apart bent plate connectors secured to each of said common continuous chords defining said intersection points for said plurality of grid modules, whereby enhanced strength in column activity and transverse bending for said modular space frame is provided.

4,211,045
BUILDING STRUCTURE

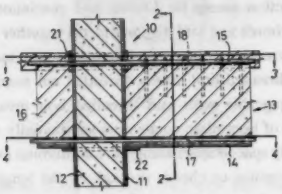
Hajime Koizumi, Tokyo; Kozo Toyama, Tama; Mikio Kobayashi; Hajime Hatano, both of Hachiooji; Toshio Saeki, Tama; Kaoru Mizukoshi, Hino; Shinichi Tamanaga; Keizo Miyakawa, both of Kodaira, and Tomoyasu Kato, Tokyo, all of Japan, assignors to Kajima Kensetsu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1977, Ser. No. 858,198

Claims priority, application Japan, Jan. 20, 1977, 52-5198; Mar. 17, 1977, 52-30112; May 24, 1977, 52-66452[U]; May 24, 1977, 52-66453[U]; May 24, 1977, 52-66454[U]

Int. Cl.² E04B *5/19*

U.S. Cl. 52—251 **2 Claims**



1. A building structure comprising:
(a) a concrete filled steel tube column;
(b) a first ring stiffener connected to the outer periphery of said column to project horizontally therefrom;
(c) a vertical gusset plate projecting from said column above said first ring stiffener;
(d) a U-shaped channel connected to said gusset plate above said first ring stiffener, said U-shaped channel having cut-away portions defined in the ends of its upper side portions;
(e) steel reinforcing rods positioned in said channel and extending through said column;
(f) a steel reinforcing rod ring encircling the outer periphery of said column within said cut-away portions;
(g) said first ring stiffener and the bottom portion of said channel being securely connected to each other; and
(h) concrete filled in said channel and concrete embedding said steel reinforcing rod ring.

4,211,046
ACOUSTICAL PANEL MOUNTING ELEMENT

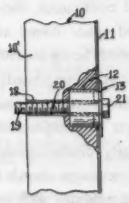
James E. Shahan, Chicago, Ill., assignor to Transco, Inc., Chicago, Ill.

Filed Aug. 15, 1977, Ser. No. 824,826

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742466

Int. Cl.² E04B *1/38*

U.S. Cl. 52—506 **1 Claim**



1. An acoustical panel mounting for isolating the metallic facing of the panel from vibration and noise of its supporting structure with the panel providing a pocket in one wall for the panel mounting and having a passage extending therefrom throughout the width of the panel comprising
(a) an outer hollow circular body carried in the pocket formed in the panel and exposed through its metallic facing,
(b) a radially extending collar-forming flange formed on one end of said body and adapted to have facial abutment with the metallic facing surrounding the pocket formed therein,
(c) a cylindrical connector-receiving inner sleeve within said body and of a length equal to that of said body so as to extend coaxially thereof and of the passage formed through the panel,
(d) a ring of resilient material of a size to embrace said inner sleeve and extending inwardly from the other end of said body and terminating short of said collar-forming flange so as to form an air space about one end of said sleeve and to isolate said sleeve from said body and the metallic facing of the panel, and
(e) a connector having an enlarged head in contact with said one end of said inner sleeve within the periphery of said body and out of contact with said ring and having an elongated threaded shank freely journalled through said sleeve and the passage formed in said panel for mounting the panel to a supporting structure.

4,211,047
STRUCTURAL SPANNING MEMBER

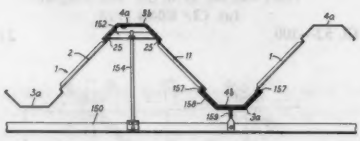
Martin H. Briggs, The Mound, White Hill, Caterham, England

Filed Mar. 7, 1978, Ser. No. 884,196

Claims priority, application United Kingdom, Mar. 23, 1977, 12228/77

Int. Cl.² E04D *1/00*

U.S. Cl. 52—522 **14 Claims**



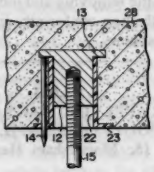
8. A structural spanning member for use as a beam or cross member which is capable of linearly extending as an unsupported span between end supports of a building structure, said member comprising
a generally planar elongated central web section which includes a plurality of spaced apart indentations formed along the elongated length thereof which each extend transversely across said central web section with respect to the elongated dimension thereof, said indentations forming elongated raised portions which project out of the general plane of said central web section so as to strengthen said central web section,
oppositely directed elongated chord sections extending away from opposite lateral sides of said elongated central web section, said chord sections being integral with said central web section, each of said chord sections including a planar main portion and a planar extension portion integral therewith, the planar main portions of said opposite chord sections being oppositely inclined with respect to the general plane of said central web section and mutually parallel, the planar extension portions of said opposite chord sections extending generally orthogonally with respect to the general plane of said central web section, said opposite chord sections being dimensioned relative to one another such that when two such spanning members are placed together to form a trunicated inverted V-configuration they will snap fit together, with a smaller chord section of one such member snap fitting within a larger chord section of the other, to thus form together a single pitch of a building structure.

4,211,048

CONCRETE ANCHOR

Kozaburo Naka, Tokyo, Japan, assignor to Kabushiki Kaisha Mikado, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,781
Int. Cl.[2] E04B 1/41
U.S. Cl. 52—700 4 Claims



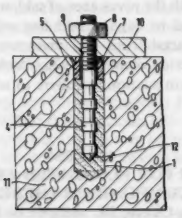
1. An anchor adapted to be embedded into a concrete construction for suspension of a ceiling panel, duct or the like, comprising a metallic suspension member including a cylindrical body having an axial thread bore which is open at its lower end, a head flange disposed on the top end of the body, and a plurality of the needles having their one end secured to the head flange and extending in parallel and spaced relationship with the body, and a support member formed of a synthetic resin material and including a sleeve which surrounds the body and a pedestal disposed at the lower end of the sleeve and extending diametrically of the sleeve, the sleeve having an axial length which is the same as or greater than that of the body, the pedestal being formed with a plurality of openings for receiving the needles, each of the needles having a length such that its free end projects downwardly beyond the associated opening formed in the pedestal.

4,211,049

ARRANGEMENT FOR AND A METHOD OF ANCHORING A MOUNTING ELEMENT IN A HOLE OF A SUPPORT STRUCTURE

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,660
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746482
Int. Cl.[2] E04B 1/41; F16B 39/00
U.S. Cl. 52—704 9 Claims



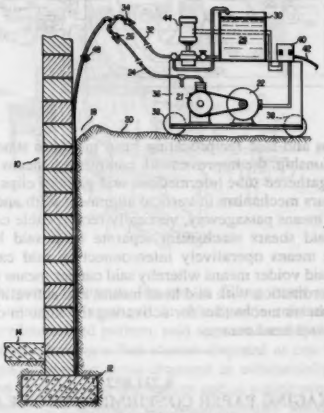
1. In an arrangement for anchoring a mounting element in a hole of a support structure by use of a hardenable binding material, a combination comprising a feeding device having an outlet section which is insertable into the hole of the support structure so as to introduce the hardenable binder material into the latter, and thereafter withdrawable from the hole; and a mounting element having a portion which is insertable into the hole after withdrawing said outlet section of said feeding device from the hole, so as to be anchored in the hole when the binding material is hardened in the latter, said insertable portion of said mounting element having a predetermined volume, and said insertable outlet section of said feeding device having a volume which corresponds to the volume of said insertable portion of said mounting element so that due to the presence of said insertable portion only enough binder material can enter the hole to anchor the mounting element, whereby the expulsion of excess binder material from the hole upon introduction of said mounting element is prevented.

4,211,050

SEALING PROCESS FOR UNDERGROUND WALLS

Daniel S. Cvacho, 241 Kirkley Cir., Forest, Va. 24551

Filed Oct. 24, 1978, Ser. No. 954,290
Int. Cl.[2] E02D 31/02
U.S. Cl. 52—742 14 Claims



1. A process for sealing an underground wall from a footing beneath the ground to a grade level which comprises the steps of

(a) inserting a hollow pipe substantially vertically at a first position closely adjacent said wall to a depth adjacent said wall footing and the base of the wall with the aid of compressed air pumped through said hollow pipe,

(b) injecting a sealant material under a pressure of from about 20 to about 150 pounds per square inch through said hollow pipe to effect a seal between said footing and the bottom of said wall,

(c) withdrawing said pipe vertically and progressively while injecting additional sealant material under said pressure until said wall is sealed from said footing to grade level in a first vertical position,

1. said compressed air serving to expose the surface of the wall which is then contacted by said sealant material under pressure whereby said wall is pressure treated from the outside at high pressure so that holes and cracks that may exist in the walls are filled,

(d) indexing said hollow pipe laterally and repeating steps (a), (b), and (c),

(e) and continuing said lateral indexing and the repetition of steps (a), (b), and (c) until said entire underground wall is sealed externally from said footing to grade level.

4,211,051

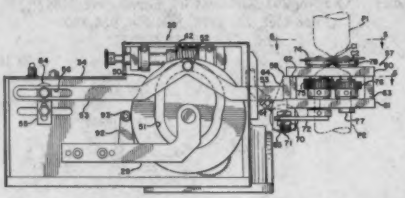
CUT-OFF DEVICE FOR CHUB MACHINES

Phillip C. Tucker, Bettendorf, Iowa, assignor to The Kartridg Pak Co.

Filed Jan. 19, 1978, Ser. No. 870,606
Int. Cl.[2] B65B 51/04, 9/06
U.S. Cl. 53—138 A 4 Claims

1. In a chub machine for forming chub packages and having, means for continuously forming a web of packaging material

into a tube, means for continuously feeding said tube downwardly over a hollow vertical mandrel, means for delivering a flowable product to said mandrel so as to continuously discharge product from the bottom end thereof into said tube, voider means for voiding product from short lengths of said tube at predetermined intervals, vertically reciprocating head means having a passageway through which said tube descends and containing means to gather said short lengths of voided tube and apply a pair of spaced clips to each said gathered length, and means operatively interconnecting said voider



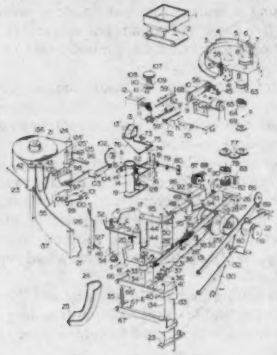
means and said reciprocating head means in timed operating relationship, the improvement, comprising: means for severing said gathered tube intermediate said pairs of clips comprising, a shears mechanism in vertical alignment with and below said head means passageway, vertically reciprocable carrier means for said shears mechanism separate from said head means, drive means operatively interconnecting said carrier means and said voider means whereby said carrier means reciprocates in coordination with said head means, and activating means for said shears mechanism for activating the same in coordination with said head means.

4,211,052

PACKAGING PAPER CONFIRMING DEVICE IN A COIN PACKAGING MACHINE

Yorizo Miyazaki; Hideshi Sentoku, and Katusuke Furuya, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1979, Ser. No. 21,703
Claims priority, application Japan, Mar. 23, 1978, 53-33325
Int. Cl.[2] B65B *57/00, 11/04*
U.S. Cl. 53—77 **1 Claim**



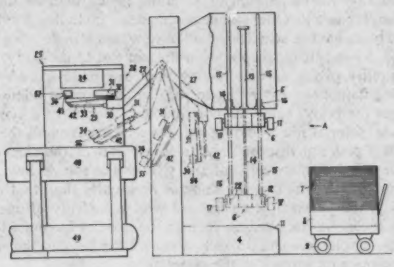
1. A packaging paper conforming device in a coin packaging machine which comprises a group of selection switches provided on a coin kind setting mechanism selectable by a coin kind setting operation in accordance with the kind of coin to be packaged, a group of setting switches provided on an adjustment mechanism set at a predetermined angle of rotation in accordance with relation between the selection switches and the setting switches and a packaging paper switch operable by the mounting and the removing of a removable charging stand, and in which non-conformity signal produced from the selection of the selection switches and the setting of the setting switches is put into and stored in a memory to indicate the non-conformity of the packaging paper and to disenable the operation of the machine, and the memory is reset through the packaging paper switch by the inspection of the packaging paper attendant on the removing and mounting of the charging stand to eliminate the non-conformity signal and to enable the operation of the machine.

4,211,053

MACHINES FOR APPLYING BAGS OR SACKS TO THE DISCHARGE SPOUTS OF BAG-FILLING MACHINES

Peter J. Niccolls, 15c Martlesham Heath, Ipswich, Suffolk, England

Filed Oct. 6, 1978, Ser. No. 949,034
Int. Cl.[2] B65B *43/30*
U.S. Cl. 53—386 **11 Claims**



1. In a machine for applying a bag to the discharge spout of a bag filling machine, including a transfer device for advancing the bag to the discharge spout, said transfer device comprising opposed suction means for engaging opposite sides of the bag adjacent its mouth, and means for parting said opposed suction means so as to open the bag mouth for placing over the discharge spout, improved suction means comprising:

(a) opposed main suction members arranged to engage the bag adjacent one end of its mouth and pivotally mounted so as to be rockable apart to open said bag mouth,

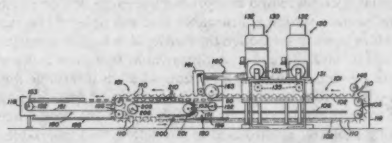
(b) opposed auxiliary suction members pivotally mounted coaxially with the pivot axes of said main suction members and arranged to engage said bag adjacent its mouth at positions spaced from said main suction members, said auxiliary suction members being rockable apart together with said main suction members to assist opening of said bag mouth.

4,211,054

CARTONER FOR ELONGATED ARTICLES AND COMPONENTS THEREOF

Elmer D. Sramek, Cicero, Ill., assignor to Redington Inc., Chicago, Ill.

Filed Sep. 5, 1978, Ser. No. 939,249
Int. Cl.[2] B65B *1/32, 63/02*
U.S. Cl. 53—502 **34 Claims**



1. Handling mechanism for predetermined unshaped bundles

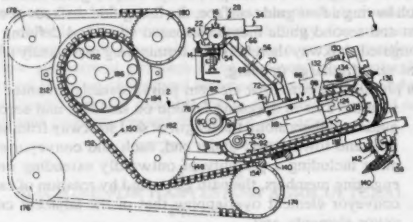
of elongated articles comprising a source of a series of predetermined unshaped bundles of elongated articles, a first continuous conveyor having a set of first article buckets thereon, said first conveyor having a first reach adjacent to said source of unshaped bundles of articles, said set of first article buckets while traveling along said first reach of said first conveyor each receiving an unshaped bundle of articles therein, a second continuous conveyor having thereon a set of second article buckets each including a bottom wall and two opposed side walls, each of said second article buckets having at least one of said side walls shiftable with respect to the other side wall between a retracted receiving position and a closed shaping position, said second conveyor having a first reach adjacent to said first reach of said first conveyor, said set of second article buckets while traveling along said first reach of said second conveyor each receiving an unshaped bundle of articles therein from an associated one of said first buckets, and control mechanism for said second article buckets for placing said one side wall in the retracted receiving position while receiving an unshaped bundle of articles in the associated second article bucket and for thereafter moving said one side wall to the closed shaping position thereof to arrange the unshaped bundle into a bundle having a predetermined desired shape.

4,211,055

MACHINE FOR FEEDING, CUTTING, SPACING AND ACCUMULATING ARTICLES

Marshall Long, Man-O-War Cay, The Bahamas; Lewis F. Alley, Kansas City, Mo., and James E. White, Overland Park, Kans., assignors to Marlen Research Corporation, Overland Park, Kans.

Filed Aug. 30, 1978, Ser. No. 938,038
Int. Cl.[2] B65B *35/24*
U.S. Cl. 53—517 **22 Claims**



1. In a machine for packing clusters of side-by-side sausages into containers wherein the individual sausages are obtained from initial sausage pencils having lengths several times greater than the length of each sausage, the improvement comprising:

means for severing end-to-end segments from each pencil, collecting the end-to-end segments into side-by-side relationship, and grouping side-by-side segments into clusters so that at least several of the segments in each cluster are obtained from the same pencil,

said means including mechanism for processing the pencils into a line of side-by-side segments and apparatus for receiving the line of segments from the mechanism and for grouping the same into multi-segment clusters having generally cylindrical configurations,

said apparatus including a turret having a series of cylindrical, cluster-maintaining chambers and transfer structure for receiving side-by-side segments from said mechanism and depositing the same by groups into said chambers, thereby forming said clusters,

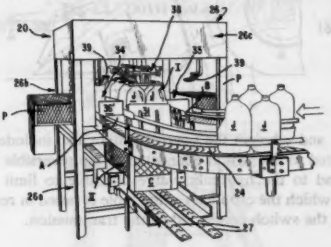
said turret being rotatable about a certain axis and being provided with an arcuate periphery, said chambers having longitudinal axes that extend in parallel relationship to said axis of rotation of the turret and being spaced apart in a circumferential series about said axis of rotation, said chambers each being provided with a transverse inlet from said periphery rendering the latter discontinuous, said transfer structure including an endless, flexible conveying element looped around said periphery of the turret and operable to move segments along the periphery and into said inlets as the elements and the turret are driven at relatively differing speeds.

4,211,056

CASE FILLING APPARATUS

Edward W. Birk, Fort Atkinson, Wis., assignor to Crepaco, Inc., Lake Mills, Wis.

Filed Oct. 26, 1978, Ser. No. 954,872
Int. Cl.[2] B65B *21/06, 21/18*
U.S. Cl. 53—543 **9 Claims**



1. A high-speed apparatus for use in filling cases with a plurality of containers arranged in side-by-side relation and forming a predetermined pattern, said apparatus comprising a supporting frame having a first station disposed at one level, relatively spaced staging areas disposed at substantially said one level and adjacent said one station and at which predetermined numbers of containers are simultaneously assembled, and a second station disposed at a second level beneath said first level; first means for conveying the containers to said staging areas; second means for conveying a predetermined number of empty cases to said second station; third means for simultaneously transferring the assembled predetermined number of containers from the staging areas to the first station and simultaneously therewith arranging thereon the transferred containers in side-by-side relation forming the predetermined pattern; and fourth means for lowering as a unit the containers while in the predetermined pattern from the first station into the predetermined number of cases at the second station; all of said means being actuated in a predetermined timed sequence.

4,211,057

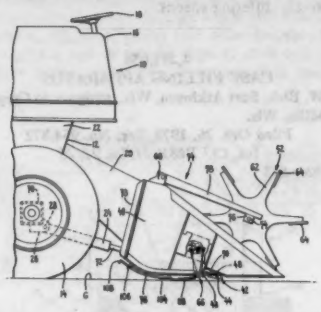
COMBINE HARVESTER AUTOMATIC TABLE HEIGHT CONTROL

Robert S. Dougherty, Oakville; Walter Hirsch, Don Mills, and Rene March, Ballinafad, all of Canada, assignors to Massey-Ferguson Industries Limited, Toronto, Canada

Filed Mar. 20, 1978, Ser. No. 888,277
Int. Cl.[2] A01D *67/00*
U.S. Cl. 56—10.2 **5 Claims**

1. An improved combine harvester automatic table height control including a combine harvester frame, driven wheels supporting the frame above the ground, drive means on the frame connected to the driven wheels, an elevator housing pivotally attached to the frame, a crop harvesting table attached to the free end of the elevator housing, a hydraulic cylinder attached to the frame and the elevator housing operable to raise and lower the crop harvesting table, a hydraulic valve capable of directing hydraulic fluid to and from the hydraulic cylinder, a height sensing assembly attached to the crop harvesting table, and a control system operably attached to the height sensing assembly and to the hydraulic valve, characterized by the drive means connected to the driven

wheels including a reversible transmission, and the control system including a switch connected to the reversible transmission and to the hydraulic valve capable of raising the crop harvesting table upon the reversible transmission being reversed, and wherein the control system also includes a timer connected to the switch connected to the reversible transmission, and to the hydraulic valve operable to limit the time during which the crop harvesting table is raised in response to closing the switch connected to the transmission.



4,211,058

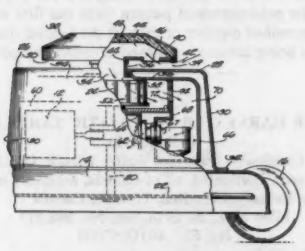
LAWN MOWER INCLUDING A CARBURETOR ENCLOSURE

Robert T. Larsen, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 14, 1978, Ser. No. 933,667

Int. Cl.[2] A01D *35/20*

U.S. Cl. 56—17.5 **7 Claims**



1. A lawn mower comprising a blade housing, wheels supporting said blade housing for movement along the ground, a rotary cutting blade supported within said blade housing, an engine supported by said blade housing and rotatably driving said rotary cutting blade, a carburetor mounted on said engine, means for enclosing said engine including an engine housing surrounding said engine and including therein a first air intake opening, and means for shielding said carburetor from air heated by said engine within said engine housing, said shielding means including a carburetor enclosure surrounding said carburetor and located within said engine housing, said carburetor enclosure including a second air intake opening communicating with said first air intake opening.

4,211,059

ROW CROP ATTACHMENT

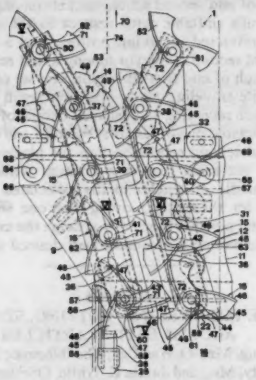
Frans J. G. C. Decoene, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 1, 1978, Ser. No. 956,710

Claims priority, application United Kingdom, Oct. 24, 1978, 46542/77

Int. Cl.[3] A01D *45/02*

U.S. Cl. 56—94 **16 Claims**



1. A row crop attachment for a harvesting machine comprising: a generally fore-and-aft extending frame having a forward inlet end and an opposing outlet end with a discharge opening therein, said frame including first and second guide members each having a first guide surface, the first guide surfaces of said first and second guide members spaced apart and defining an elongated stalkway therebetween terminating rearwardly adjacent said discharge opening;

a plurality of conveyor element pairs rotatably mounted on separate axes in opposing fashion on said first and second guide members along the length of said stalkway from said inlet end toward said outlet end, each said conveyor element including a plurality of outwardly extending crop engaging members, the path generated by rotation of each conveyor element overlapping that of the adjacent conveyor elements; and

drive means to rotate said conveyor element pairs so as to move crop material along said stalkway from said inlet end to said outlet end.

4,211,060

MOWING ROTOR

Keith H. Rhodes, Winneconne, Wis., assignor to Hesston Corporation, Hesston, Kans.

Filed Jun. 21, 1978, Ser. No. 935,677

Int. Cl.[2] A01D *55/20, 55/22*

U.S. Cl. 56—294 **21 Claims**

1. A flail-type mowing blade comprising:

a planar mounting portion adjacent one end of the blade;

a transverse cutting portion adjacent the opposite end of the

blade projecting outwardly from the plane of said mounting portion and having a transversely disposed cutting edge along the normally leading side thereof and extending inwardly from said opposite end; and

an offsetting portion joining said cutting portion to the mounting portion in laterally offset relationship thereto,

both the inner and outer terminal ends of said cutting edge being located wholly to one side of said mounting portion in spaced relationship to said plane thereof.

4,211,061

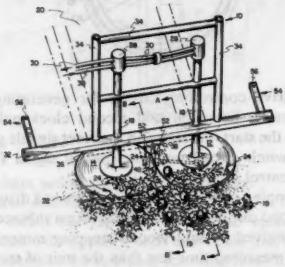
FLEXIBLE DISC CROP PICK-UP DEVICE

Clarence B. Richey, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Oct. 10, 1978, Ser. No. 949,805

Int. Cl.[2] A01D *45/00*

U.S. Cl. 56—327 R **13 Claims**



1. A harvester pick-up device for harvesting agricultural products, said device including at least one movable means that is a flexible disc having sufficient pliability for substantial deforming of said disc, said disc having a portion positioned below agricultural products to be harvested and contacting, but not invading, the ground surface upon which said products are located, the said movable means operating to lift and convey said products toward the rear of said device.

4,211,062

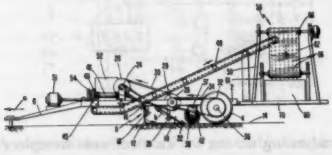
MACHINE FOR HARVESTING AGRICULTURAL PRODUCE

Yoav Sarig, 64 Henkin St., Holon; David Nahir, 19 KKL St., Bat Yam, and Yekutiel Alper, 35 Har Zion St., Rishon Le Zion, all of Israel

Continuation-in-part of Ser. No. 667,587, Mar. 17, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 842,974

Int. Cl.[2] A01D *51/00*

U.S. Cl. 56—328 R **6 Claims**



1. A machine for picking-up produce from the ground including a carriage movable over the ground in a specified direction of travel, said carriage being provided with an inclined endless conveyor having at any given time sections constituting an inclined receiving and conveying section and a returning section adjoining said inclined section, drive means for moving the conveyor with said inclined section moving in the specified direction of travel of said carriage, means for guiding a portion of said returning section of said conveyor to lie loosely on the ground and to fold back upon itself to constitute a part of the inclined section, with a small turning radius at a point where said returning section joins said inclined section and with the beginning of the inclined section in close proximity to the ground, and means for propelling produce from the ground onto said inclined section of said conveyor.

4,211,063

METHOD AND DEVICE FOR CLEANING SPINNING ROTORS IN OPEN-END SPINNING MECHANISM

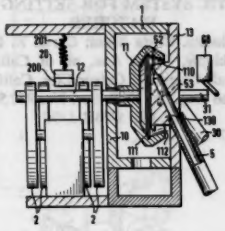
Erich Bock; Erwin Braun, and Burkhard Wulfhorst, all of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,284

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735113

Int. Cl.[2] D01H *1/12, 11/00*

U.S. Cl. 57—302 **18 Claims**



1. A method of cleaning a rotor in an open-end spinning machine which is rotated at a running r.p.m. during the spinning operation, said rotor having a collecting groove and an inner periphery, said method comprising the following steps:

reducing the speed of rotation of said rotor below its running r.p.m.;

directing a first flow of cleaning air at said collecting groove of said rotor at a first angle;

directing a second flow of cleaning air at said inner periphery of said spinning rotor at a second angle;

said first and said second flows of air being directed into said spinning rotor in divergent directions so that one of said flows is directed in the direction of rotation of the spinning rotor and the other of said flows is directed against the direction of rotation of the spinning rotor;

whereby said first and second flows of air dislodge trash from said rotor.

4,211,064

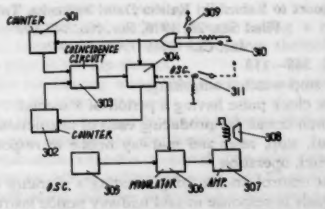
TIME SIGNAL TIMEPIECE

Masayuki Ikeda, and Takahiro Naka, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Suwa, Japan

Filed Sep. 20, 1978, Ser. No. 944,158

Int. Cl.[2] G04B *21/08*; G04C *21/00*

U.S. Cl. 368—272 **2 Claims**



1. A time signal timepiece having a time-keeping portion for producing a signal every hour and a time signal sound generat-

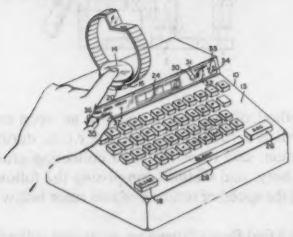
ing portion which consists of a first counter for counting the number of said signals; a first oscillator circuit operated by said signal and determining an interval of a time signal sound; a second counter for counting the number of signals from said first oscillator circuit; a coincidence circuit for stopping an oscillation of said first oscillator circuit by detecting a coincidence of contents of said first counter with that of said second counter; a second oscillator circuit for determining the frequency of the time signal sound; a modulator for modulating a signal from said second oscillator circuit and determining the number of the signals of time information according to the signal from said first oscillator circuit; an amplifier and an electro-acoustic transducer for amplifying the signal from said modulator and generating the time signal sound; and a switch for correcting the contents of said first counter so that it may coincide with the display time of a timepiece.

4,211,065

AUTOMATIC SYSTEM FOR SETTING DIGITAL WATCHES

Lawrence S. Schmitz, Costa Mesa; Curtis E. Dodds, Stanton, and John Whipple, Santa Ana, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 26, 1977, Ser. No. 827,991
Int. Cl.[2] G04B *1/00*
U.S. Cl. 368—47 **19 Claims**



1. A system for setting a digital watch having a divider chain including a plurality of counter registers and having an energy responsive means for receiving setting pulses comprising:

a data entry unit including processing means for generating pulse bursts of a calculated number of pulses for selectively causing said counter registers to count a predetermined number of times from a reset count, a reference watch for time setting, a keyboard for entering messages to be set in said digital watch and means for providing commands as a pulse width modulated code, and

an energy source responsive to said processing means for emitting said commands and said pulse bursts for reception by said energy responsive means.

4,211,066

STOP WATCH

Yasuo Kusumoto, and Joichi Miyazaki, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Sep. 29, 1978, Ser. No. 947,199
Int. Cl.[2] G04F *7/00, 10/04*
U.S. Cl. 368—113 **11 Claims**

1. A stop watch, comprising;

a first clock pulse having a period of 1 second;

a switch circuit for producing each of instruction signals of start, stop, reset and midway notice in response to the switch operation;

a first control circuit for generating a plurality of control signals in response to said midway notice instruction signal;

a first drive controlling circuit for generating first driving pulses based on said first clock pulse in response to said start and stop instruction signal, and said control signals;

a first stepping motor driven by said first driving pulses, and a first display mechanism having a second hand moved by said first stepping motor;

a second clock pulse having a period shorter than that of said first clock pulse;

a second control circuit for generating a plurality of control signals in response to the midway notice instruction from said switch circuit;

a second drive controlling circuit for generating second driving pulses based on said second clock pulse in response to the start, the stop and the reset signals generated in said switch circuit and the control signal from said second control circuit; and,

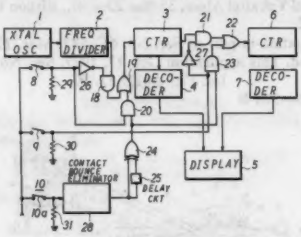
a second stepping motor driven by said second driving pulse and a second display mechanism having a subsecond hand which is moved by said second stepping motor and displays the measured time less than the unit of second.

4,211,067

TIME ADJUSTING DEVICE FOR ELECTRONIC TIMEPIECE

Hajime Oda; Toshihide Samejima; Toshio Matsumura; Nakanobu Moritani, and Masanori Fujita, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Apr. 21, 1978, Ser. No. 898,770
Claims priority, application Japan, Apr. 22, 1977, 52/46389
Int. Cl.[2] G04B *27/00*
U.S. Cl. 368—185 **8 Claims**

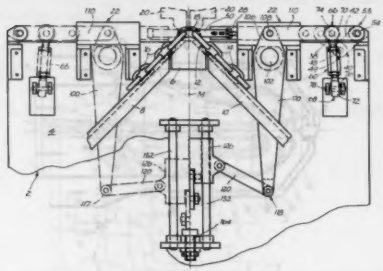


1. Time adjusting device for an electronic timepiece comprising: first means adapted to rotate in accordance with a manual operation; second means for generating pulses corresponding in frequency and number with the speed and extent of rotation of said first means; third means for converting each pulse from said second means into a plurality of pulses; fourth means for generating periodic time pulses; time counting means for counting time in response to the receipt of pulses; manually actuatable fifth means for normally applying the periodic pulses to said time counting means and for applying the plurality of pulses from said third means to the counting means upon actuation to adjust the time count therein.

4,211,068
CHAIN WELDING MACHINE

Gerhard Lange, Reutlingen, Fed. Rep. of Germany, assignor to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG), Reutlingen, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,098
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758243
Int. Cl.² B21L 3/02
U.S. Cl. 59—31 12 Claims

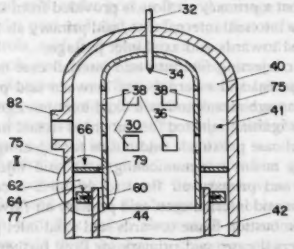


1. A chain welding machine comprising:
(a) first and second upsetting dies;
(b) first means for rapidly moving said upsetting dies into abutment with opposed ends of a chain link to be welded;
(c) second means for applying upsetting force to said upsetting dies; and
(d) fluid-controlled means for varying said upsetting force during the welding of a chain link.

4,211,069
COMBUSTION CHAMBER FOR A GAS TURBINE

Richard Kalbfuss, Mannheim, Fed. Rep. of Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jun. 22, 1978, Ser. No. 918,157
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1977, 2728399
Int. Cl.² F02C 7/12
U.S. Cl. 60—39.02 19 Claims

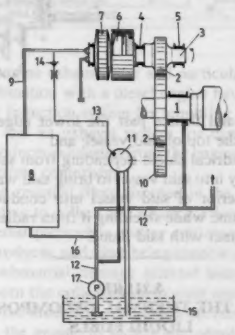


1. A combustion chamber for a gas turbine engine, comprising:
combustion cowl means for admitting an oxidizing fluid to a fuel fluid within the combustion cowl;
transition means for receiving hot power gases from the combustion cowl means;
first cooling jacket means for substantially surrounding the combustion cowl means with the oxidizing fluid;
second cooling jacket means for substantially surrounding the transition means with a gaseous medium;
at least one air gap provided between the combusiton cowl means and the transition means;
an intermediate chamber in fluid communication with the at least one air gap;
first throttle means for separating the intermediate chamber from the first cooling jacket means; and
second throttle means for separating the intermediate chamber from the second cooling jacket means.

4,211,070
START-UP MOTOR ASSEMBLY FOR ROTATIONAL MACHINES

Alexandre Portmann, Nussbaumen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jun. 26, 1978, Ser. No. 919,417
Claims priority, application Switzerland, Jun. 24, 1977, 7754/77
Int. Cl.² F01B 19/00, 25/34
U.S. Cl. 60—39.08 3 Claims



1. Turbine rotating apparatus for use with a turbine of the type including a drive shaft mounted for rotation in bearings, and an auxiliary shaft arranged in spaced parallel relationship with said turbine drive shaft, said turbine drive shaft connected to said auxiliary shaft by means of step down gear means, the turbine rotating apparatus comprising:
drive means including a hydrostatic motor and clutch means mounted on said auxiliary shaft,
first conduit and pump means for supplying oil to said hydrostatic motor, and
second conduit and pump means to deliver oil from an oil supply to the bearings of the drive shaft, said second conduit means connecting said second pump means to said hydrostatic motor for supplying oil to continuously rotate said motor at reduced speed after the turbine has been started.

4,211,071
VAPOR GENERATORS

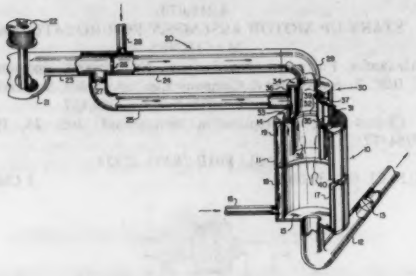
William G. Wyatt, Dallas, Tex., assignor to Vapor Energy, Inc., Grand Prairie, Tex.

Filed May 19, 1978, Ser. No. 907,694
Int. Cl.² F02C 7/00
U.S. Cl. 60—39.55 5 Claims

1. A vapor generator comprising:
an upright cylindrical jacketed vessel having a product stream conduit connected to the bottom thereof and a flame inlet at the top thereof;
means for introducing water into the jacket of said vessel adjacent the bottom thereof;
means for delivering water from said jacket to the interior of said vessel adjacent the top thereof;
a precombustion chamber mounted atop said vessel in a position to deliver a flame through said flame inlet said precombustion chamber comprising a cylindrical housing having a cylindrical depending first shield positioned therein;

means for delivering a stream of fuel and combustion supporting gas into said precombustion chamber connected to deliver said stream into the top of said precombustion chamber within said first shield;

means for delivering a stream of excess combustion supporting gas into the top of said vessel connected to deliver said stream into said precombustion chamber exteriorly of said



first shield and thence past the lower edge of said first shield into the top of said vessel; and

a second cylindrical shield depending from said flame inlet downwardly into said vessel to bring said water delivered into the interior of said vessel into conductive contact with said flame while shielding it from radiative and conductive contact with said flame.

4,211,072

DEVICE FOR THE THERMAL DECOMPOSITION OF LIQUID FUELS

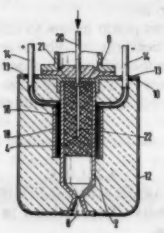
Harald Twardy, Müden, and Roger Lo, Möckmürl-Zuttlingen, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Feb. 7, 1978, Ser. No. 875,927

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706679

Int. Cl.² F02K 9/02

U.S. Cl. 60—203 **7 Claims**



1. A device for the non-catalytic thermal decomposition of liquid fuels comprising a substantially closed housing, a porous non-catalytic body of a regular geometric configuration having opposite axially separated end faces and composed of metallic foam material having a specific surface greater than 2500 m^2/m^3 disposed in said housing, an inlet for introducing such liquid fuel into said porous body passing through said housing and into said body, said body including a shallow recess disposed within one of said outer end surfaces of said body and in which said fuel inlet terminates, a centrally disposed elongated slot extending from said recess into the interior of said porous body, and an outlet, proximal the other of said end faces for directing the decomposition products from said body.

4,211,073

COMBUSTION CHAMBER PRINCIPALLY FOR A GAS TURBINE

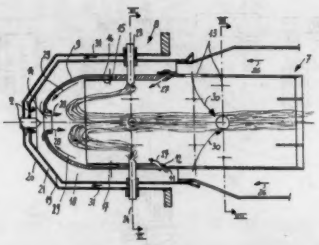
Jack Guillot, Juvisy sur Orge, France, assignor to Guidas, Loire, France

Filed Feb. 27, 1978, Ser. No. 881,538

Claims priority, application France, Feb. 25, 1977, 77 06339

Int. Cl.² F02C 7/22

U.S. Cl. 60—746 **8 Claims**



1. A combustion chamber device wherein a source of air and fuel is combined with an ignition source for combustion, said device comprising:

an external case having a hollow wall defining a first air flow passage means, said passage means having an inlet and an outlet;

an internal case mounted concentric with and juxtaposed said external case, said internal and external case defining a second passage therebetween, said internal case further comprising:

an axial inlet passage and an outlet passage, said axial inlet passage and second passage defining a secondary air flow passage means communicating with said first passage means; and

primary air flow passage means located in said internal case interposed said axial inlet passage and said outlet passage for establishing a primary air flow, said primary air flow passage means communicating with said second passage such that a primary air flow is provided from said second passage into said internal case, said primary air flow being directed towards said axial inlet passage;

means for injecting fuel into said internal case mounted to said internal and external case between said primary air flow passage means and said axial inlet passage;

means for igniting injected fuel mounted to said internal and external case proximate said means for injecting fuel, said igniting means communicating with said injecting fuel means and primary air flow to establish a combustion flame in said internal case, said primary air flow directing said combustion flame towards said axial inlet passage of the internal case, said primary air flow further diverting said flame down towards the center of said internal case and communicating with said secondary air flow through said axial inlet passage to further divert the direction of said combustion flame towards said outlet passage such that the flame forms a vortex along the axial center of said internal case and the burnt gases are diverted towards said outlet passage along said axial vortex; and

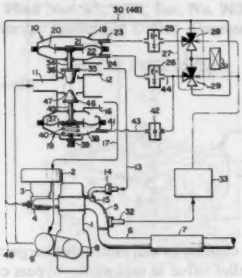
means for cooling said internal case, said cooling means interposed said injecting fuel means and said axial inlet passage such that air flow from said second passage through said cooling means cools the walls of said internal case substantially between said injecting means and said axial inlet passage.

4,211,074

SECONDARY AIR SUPPLY SYSTEM FOR THE EXHAUST SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Kyo Hattori, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 2, 1978, Ser. No. 902,244
Claims priority, application Japan, Feb. 6, 1978, 53/12156
Int. Cl.[2] F01N 3/10
U.S. Cl. 60—276 5 Claims



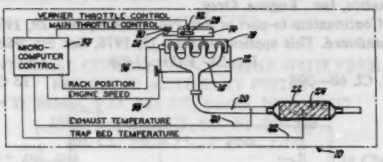
1. A secondary air supply system for the exhaust system of an internal combustion engine, comprising a source of compressed air, an air control valve which supplies a part of the air delivered from said source to the exhaust system of the engine while relieving the rest of the air, an oxygen detector for detecting residual oxygen contained in the exhaust gases flowing through the exhaust system, a source of actuating fluid pressure, a change-over valve for said actuating fluid pressure, and a controller which changes over said change-over valve in accordance with the output of said oxygen detector, said air control valve having an inlet port for receiving air from said source of compressed air, an outlet port for supplying a part of the air received to the exhaust system, a relief port for relieving the rest of the air received, a first passage which connects said inlet port and said outlet port, a second passage which connects said inlet port and said relief port, a first valve element which controls said first passage, a second valve element which controls said second passage, first, second, and third diaphragm chambers, said first and second diaphragm chambers being reciprocally supplied with either said actuating fluid pressure or atmospheric pressure by way of said change-over valve, a passage means including a throttling means and connecting said third diaphragm and one of said first and second diaphragm chambers, at least one first diaphragm which defines said first and second diaphragm chambers and is connected with said first valve element, a second diaphragm which defines said third diaphragm chamber and is connected with said second valve element, wherein said first diaphragm is adapted so as to shift said first valve element in the direction to increase the opening of said first passage when the fluid pressure in said first diaphragm chamber is lower than the fluid pressure in said second diaphragm chamber, and said second diaphragm responds to the fluid pressure in said third diaphragm chamber which varies in accordance with the duty ratio of changing over of said change-over valve and is adapted so as to shift said second valve element in the direction to decrease the opening of said second passage when the duty ratio of the mode of changing-over for supplying lower fliud pressure to said first diaphragm chamber and higher fluid pressure to said second diaphragm chamber increases.

4,211,075

DIESEL ENGINE EXHAUST PARTICULATE FILTER WITH INTAKE THROTTLING INCINERATION CONTROL

Otto A. Ludecke, and Theodore L. Rosebrock, both of Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1978, Ser. No. 952,710
Int. Cl.[2] F01N 3/10
U.S. Cl. 60—285 6 Claims



1. A diesel engine exhaust filter and particulate incineration system in combination with a diesel engine having a normally unthrottled air induction system for admitting combustion air to the engine and an exhaust system for carrying off spent combustion products exhausted from the engine, said filter and incineration system comprising:

a combustion resistant filter disposed in the exhaust system and operative to collect and retain portions of the largely carbonaceous particulate matter contained in the engine exhaust products, said filter being capable of withstanding without substantial damage internal temperatures sufficient to burn the collected particulate matter,

a throttle in the induction system and operable to restrict air flow into the engine to reduce the admittance of excess combustion air and thereby increase engine exhaust gas temperature, and

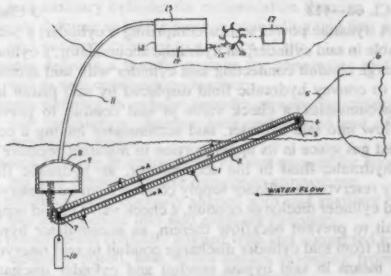
means to actuate said throttle periodically during engine operation to an air flow restricting burn mode capable of raising the particulates in said filter to their combustion temperature under certain engine operating conditions and to maintain said throttle mode for an interval adequate to burn retained particulates in the filter.

4,211,076

ENERGY CONVERTION ENGINE

Magnar J. Grande, P.O. Box 491, Metairie, La. 70004

Filed Jun. 19, 1978, Ser. No. 917,099
Int. Cl.[2] F03B 13/12; E01H 5/02
U.S. Cl. 60—398 5 Claims



1. Fuelless means of obtaining energy comprising:

(a) Cellular conveyor means for carrying air at atmospheric pressure down to great water depths and converting it to stored energy in the form of compressed air;

(b) Open bottom bell type container means for capturing the compressed air; and

(c) Means for converting the stored energy to practical use by driving a turbine wheel through the use of a pressure container and a nozzle arrangement.

4,211,077

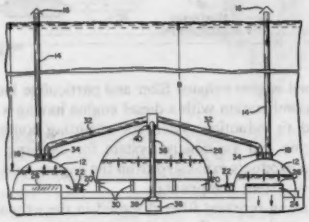
HYBRID HYDROSTATIC-PNEUMATIC POWER GENERATION SYSTEM

Joseph C. Cassidy, Springfield, Oreg., assignor to Energy Kinematics, Inc., Eugene, Oreg.

Continuation-in-part of Ser. No. 920,456, Jun. 29, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,034

Int. Cl.[2] F15B *11/06*

U.S. Cl. 60—398 **13 Claims**



1. The method of utilizing the kinetic energy associated with the hydraulic head created by a dam having fluid stored behind its upstream side and open on its downstream side, comprising:

(a) providing a transfer tank proximate the base of said dam, having air inlet means passing out of said fluid;

(b) emptying the fluid from said transfer tank on the downstream side of said dam while simultaneously filling said transfer tank with air through said air inlet means;

(c) refilling said transfer tank with fluid from the upstream side of the dam, through a water inlet in said transfer tank while isolating said air inlet means, thereby pressurizing the air located in said transfer tank;

(d) storing said pressurized air in a storage tank which is interconnected to said transfer tank; and

(e) withdrawing said pressurized air from said storage tank to perform work.

4,211,078

DYNAMIC POWER SOURCE

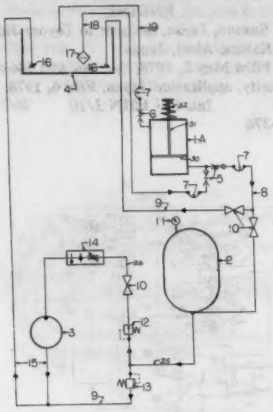
Robert F. Bass, 428 A St., Myrtle Point, Oreg. 97458

Filed Feb. 22, 1979, Ser. No. 14,238

Int. Cl.[2] F15B *1/02, 15/18*

U.S. Cl. 60—413 **3 Claims**

1. A dynamic power source comprising a cylinder, a piston movable in said cylinder, an hydraulic accumulator, a cylinder discharge conduit connecting said cylinder with said accumulator to convey hydraulic fluid displaced by said piston into said accumulator, a check valve in said conduit to prevent backflow into said cylinder, said accumulator having a compressed gas space in its upper portion to maintain pressure on said hydraulic fluid in the accumulator, an hydraulic fluid supply reservoir, a cylinder supply conduit from said reservoir to said cylinder discharge conduit, a check valve in said supply conduit to prevent backflow therein, an accumulator bypass conduit from said cylinder discharge conduit to said reservoir, valve means in said bypass conduit and cylinder discharge conduit to direct hydraulic fluid from said cylinder either to said accumulator or to said reservoir, an hydraulic motor, a motor supply conduit from said accumulator to said motor, an adjustable valve in said motor supply conduit to control the flow of hydraulic fluid to said motor, a low pressure relief valve in said motor supply conduit, a motor discharge conduit from said motor to said reservoir, a motor bypass conduit from



said motor supply conduit to said motor discharge conduit, and a high pressure relief valve in said motor bypass conduit.

4,211,079

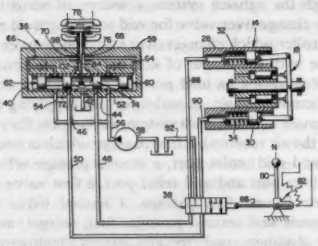
POSITIVE NEUTRAL CONTROL FOR HYDROSTATIC TRANSMISSION

Arvid H. Saele, Dubuque, and Donald O. Johannsen, Sherrill, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 27, 1979, Ser. No. 33,769

Int. Cl.[2] F16H *39/46*

U.S. Cl. 60—433 **4 Claims**



1. In combination with a hydrostatic transmission and control therefor including a reversible, variable displacement pump having an angularly adjustable swashplate, servo-actuator means coupled to the swashplate, a pilot-operated displacement control valve coupled to the servo-actuator means by forward and reverse control fluid lines, biasing means urging the swashplate to a centered, zero-displacement effecting position, said actuator means being responsive to forward and reverse control fluid pressure for respectively effecting angular movement of the swashplate in opposite directions from its centered position, a command signal responsive means forming a part of the displacement control valve and being responsive to command signals for routing fluid to one or the other of the forward and reverse control fluid lines, and a control lever mounted for movement to opposite sides of a neutral position for respectively effecting transmission of common signal to the command signal responsive means, a positive neutral control for ensuring the swashplate will be in its neutral position whenever the control lever is in its neutral position, comprising: a neutral control valve fluidly connected to the forward and reverse control fluid lines and to a sump; said valve including

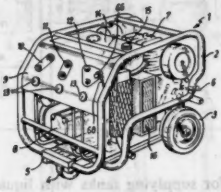
a valve element operable between a neutral position connecting the forward and reverse fluid lines to the sump and a working position blocking the forward and reverse fluid lines from each other and from the sump; and connection means connecting the control lever to the valve element for retaining the latter in its neutral position only when the control lever is in its neutral position.

4,211,080

HYDRAULIC POWER PACKS

Gordon D. White, Tewkesbury, England, assignor to Bredon Hydraulics Limited, Tewkesbury, England

Filed Nov. 27, 1978, Ser. No. 963,766
Claims priority, application United Kingdom, Nov. 30, 1977, 49792/77
Int. Cl.² F15B *15/18*
U.S. Cl. 60—458 **4 Claims**



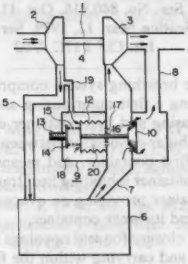
1. A hydraulic power pack comprising a prime mover, at least one hydraulic pump, a reservoir and associated valving and hydraulic circuitry and in which each of the components thereof is mounted on one of two parts of a frame which parts are hinged together at one side thereby enabling the frame to be opened to allow access to said components for maintenance.

4,211,081

EXHAUST BYPASSING SYSTEM FOR A TURBOCHARGER

Koichiro Yamada, Ibaraki, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 14, 1978, Ser. No. 960,565
Claims priority, application Japan, Nov. 21, 1977, 52/140479
Int. Cl.² F02B *37/00*
U.S. Cl. 60—602 **7 Claims**



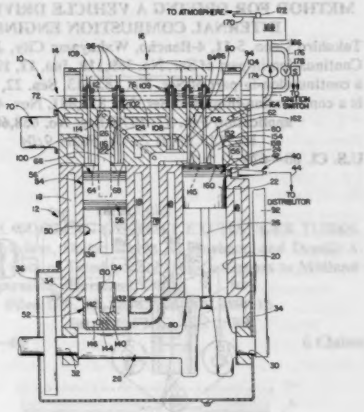
1. An exhaust bypassing system for a turbocharger, the turbocharger having a compressor which is driven through a shaft by a turbine, including:
an engine which is arranged between an outlet of the compressor and an inlet of the turbine,
an exhaust passage which is disposed between an exhaust port of the engine and the inlet of the turbine,
an exhaust bypass passage which is disposed between the exhaust passage and an outlet of the turbine, and
a valve assembly which opens and closes the exhaust bypass passage,
the valve assembly being composed of a diaphragm which forms a first pressure chamber for introducing a pressure of the compressor outlet thereinto, a rod which is mounted on one end of the diaphragm and which extends across the exhaust passage, and a valve body which is mounted on a fore end of the rod and which opens and closes an opening provided in the exhaust bypass passage, characterized in that said valve assembly is formed with a second pressure chamber which is partitioned by said diaphragm and located on a side opposite to said first pressure chamber and into which an exhaust pressure of said engine is introduced.

4,211,082

INTERNAL COMBUSTION ENGINE WITH FREE FLOATING AUXILIARY PISTON

Robert D. Bristol, P.O. Box 377, Beulah, Mich. 49617

Filed Oct. 11, 1978, Ser. No. 950,368
Int. Cl.² F02B *13/22*; F04C *1/00*
U.S. Cl. 60—605 **15 Claims**



1. An internal combustion engine comprising:
a cylinder block defining a power cylinder;
a power piston reciprocating within said power cylinder and means defining a combustion chamber with said power cylinder and power piston;
an output crank connected to said power piston by a connecting rod;
an auxiliary cylinder having a first and a second end;
a free floating double acting auxiliary piston disposed within said auxiliary cylinder for reciprocation therein;
means defining an intake passage connecting said first end of said auxiliary cylinder to a source of air;
means defining a transfer passage for connecting said first end to said combustion chamber;
means defining an exhaust transfer passage for connecting said combustion chamber with said second end of said auxiliary cylinder;
means defining an atmospheric exhaust passage for connecting said exhaust transfer passage to atmosphere;
a return cylinder coaxially aligned with said auxiliary cylinder and opening into said auxiliary cylinder;
a return piston coaxially aligned with and connected to said auxiliary piston, said return pistion extending from said auxiliary piston into said return cylinder;
a cushioning cylinder opening into said auxiliary cylinder at the second end thereof and being coaxially aligned with said auxiliary cylinder;
a cushioning piston connected to and coaxially aligned with said auxiliary piston, said cushioning piston extending

toward said second end and entering said cushioning cylinder during reciprocation of said auxiliary piston;

a gas transfer passage connecting said return cylinder with said exhaust transfer passage;

check valve means within said gas transfer passage for permitting flow only from said exhaust transfer passage to said return cylinder through said gas transfer passage; and

valving means disposed within said intake passage, said exhaust transfer passage and said atmospheric exhaust passage for controlling the flow of gases through said passages so that said auxiliary piston intakes, compresses and transfers a gas to said combustion chamber and exhaust from said combustion chamber passes to said auxiliary cylinder to move said auxiliary piston from said second end to said first end and for opening said exhaust transfer passage to said atmospheric exhaust passage when said auxiliary piston moves from said first end to said second end.

4,211,083

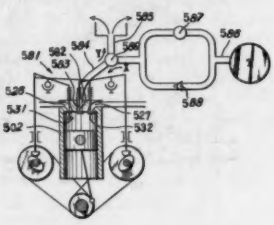
METHOD FOR DRIVING A VEHICLE DRIVEN BY AN INTERNAL COMBUSTION ENGINE

Takahiro Ueno, 5-11, 4-Bancho, Wakayama City, Japan

Continuation-in-part of Ser. No. 369,119, Jun. 11, 1973, which is a continuation-in-part of Ser. No. 182,613, Sep. 22, 1971, which is a continuation-in-part of Ser. No. 873,881, Nov. 4, 1969. This application Feb. 17, 1976, Ser. No. 658,601

Int. Cl.[2] F01B *29/04*; F02N *9/04*

U.S. Cl. 60—626 **9 Claims**



1. A method for driving a vehicle driven by an internal combustion engine having a plurality of compression chambers divided into a first set and a second set, each of said sets being able to be separately operated and to be convertible in operation so as to take a two-step compression action, comprising starting the engine by making at least said first set take an engine action, making the vehicle run with said first and second sets taking an engine action, putting said second set into an unloaded state during the vehicle running and controlling the engine by making at least said second set take a two-step compression action.

4,211,084

CONVERSION OF ENERGY BY MEANS OF TETHERED WHIRLWINDS

Volney Wallace, Terra, Box 1 West, Dugway, Utah 84022

Filed Aug. 25, 1978, Ser. No. 936,793

Int. Cl.[2] F03G *7/04*

U.S. Cl. 60—641 **18 Claims**

1. A process for transforming heat contained in superadiabatic air at or near ground level into useful wind energy in the form of a tethered artificial whirlwind which comprises

(a) initiating a tethered whirlwind column,

(b) powering said whirlwind column by causing said superadiabatic air to flow into the base of the whirlwind column, and

(c) utilizing the wind energy contained in said whirlwind column.

4,211,085

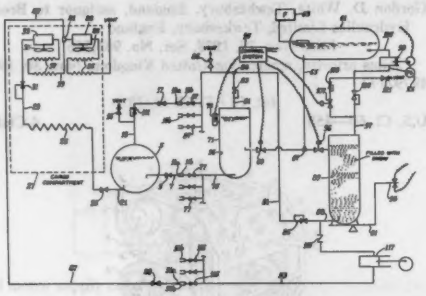
SYSTEMS FOR SUPPLYING TANKS WITH CRYOGEN

Lewis Tyree, Jr., 145 Briarwood Ave., North, Oak Brook, Ill. 60521

Continuation-in-part of Ser. No. 737,440, Nov. 1, 1976, Pat. No. 4,127,008, and a continuation-in-part of Ser. No. 737,439, Nov. 1, 1976, Pat. No. 4,100,759. This application Jul. 14, 1978, Ser. No. 924,685

Int. Cl.[2] F17C *7/02*

U.S. Cl. 62—48 **10 Claims**



1. A method for supplying tanks with liquid CO_2, which method comprises

creating a low-temperature coolant reservoir of solid carbon dioxide in a chamber at the triple point pressure or below,

providing a source of liquid CO_2 at a higher pressure than said triple point pressure,

supplying said higher pressure liquid CO_2 to a tank,

removing CO_2 vapor from the tank as said higher pressure liquid CO_2 is being supplied and

transferring said removed CO_2 vapor from the tank to said chamber and condensing said vapor by melting said solid CO_2 in said reservoir.

4,211,086

CRYOGENIC BREATHING SYSTEM

Rex D. Leonard, Indianapolis, Ind., and Jan Hulstyn, Redondo Beach, Calif., assignors to Beatrice Foods Company, Chicago, Ill.

Continuation of Ser. No. 840,916, Oct. 11, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,450

Int. Cl.[2] F17C *7/02*

U.S. Cl. 62—50 **19 Claims**

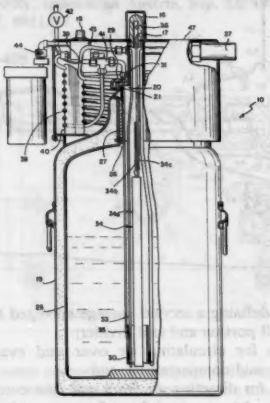
1. A cryogenic breathing system comprising a first storage container including a first outer casing and a first inner container, the first casing and first container each having a small opening, a first tubular connection between the openings of the first casing and first container, and means between the first casing and first container inhibiting heat transfer therebetween, said storage container providing an evacuable space between its outer casing and its inner container,

a first gas-tight closure for said openings fastened to the first outer casing and carrying within the first inner container a first withdrawal tube, the first gas-tight closure carrying outside the first outer casing a first connecting means in communication with the first withdrawal tube and including a first complementary surface, and first means to control flow through the first withdrawal tube and first connecting means, and

a second portable container including a second outer casing and a second inner container, the second outer casing and second inner container having a small opening, a second tubular connection between the openings of the second outer casing and second inner container, and further means between the second casing and second inner container inhibiting heat transfer therebetween, said portable

container providing an evacuable space between the second outer casing and the second inner container,

a second gas-tight closure for said second openings carrying within the second inner container a liquid level indicating means, a withdrawal tube, and means encircling the liquid level indicating means, the second gas-tight closure carrying outside the second outer casing a transparent sight gauge into which the liquid level indicating means extends, a second connecting means including a normally closed check valve in communication with the second inner container and including a second complementary surface adapted to engage the first connecting means of



the first storage container, a breathing coil in communication with the second withdrawal tube and a second means to control flow through the second withdrawal tube and breathing coil,

said portable container being connectable to and fillable from said storage container through said first and second connecting means by rotating the portable container and engaging the first and second complementary surfaces of the two connecting means and allowing the portable container to return to its vertical position, to open the check valve of the second connecting means, and to lock the second portable container to the first storage container for filling.

4,211,087

DEVICE FOR MAINTAINING A VACUUM IN A COMPARTMENT OF A ROTATING MEMBER

Pierre H. Burnier, Longjumeau, France, assignor to BBC Brown Boveri & Cie., Baden, Switzerland

Filed Mar. 1, 1978, Ser. No. 882,093
Claims priority, application France, Mar. 3, 1977, 77 06188
Int. Cl.[2] F17C 7/02
U.S. Cl. 62—55.5 **11 Claims**

1. A device for maintaining a vacuum in a compartment of a rotating cryostat with a fixed source of vacuum, comprising:

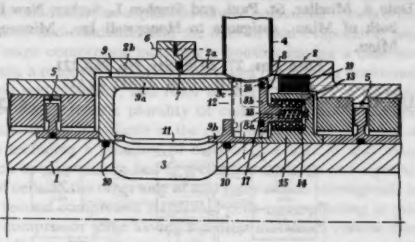
a rotating member of the rotating cryostat having a compartment and an orifice in communication with the compartment;

a fixed member, concentric with the rotating member and connected to the fixed source of vacuum;

valve means for releasably providing communication between the orifice and the fixed source of vacuum through the fixed member; and

collector means for providing an axially extending aperture in communication with the orifice of the rotating member,

the valve means releasably closing the aperture of the collector means to prevent communication between the



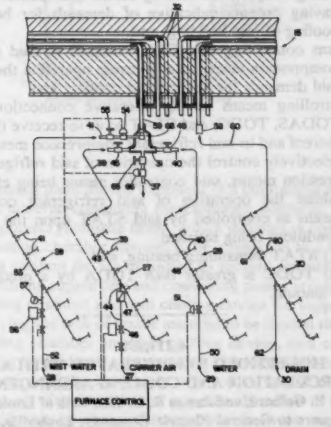
orifice of the rotating member and the fixed source of vacuum.

4,211,088

INTERNAL COOLING OF HEAT EXCHANGER TUBES

Richard R. Mayers, Delta; Steven R. Huebner, and Dennis A. Chojnacki, both of Toledo, all of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 13, 1978, Ser. No. 969,116
Int. Cl.[2] F17C 7/02
U.S. Cl. 62—64 **6 Claims**



1. A method of injection of cooling media into a heat exchanger tube which comprises:

injecting a controlled flow rate of gas into the heat exchanger tube;

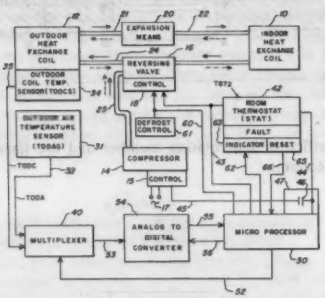
spraying a controlled flow rate of a fluid mist into each heat exchanger tube while maintaining a controlled gas flow rate into the heat exchanger tube;

injecting a controlled flow rate of liquid into each heat exchanger tube.

4,211,089
HEAT PUMP WRONG OPERATIONAL MODE DETECTOR AND CONTROL SYSTEM

Dale A. Mueller, St. Paul, and Stephen L. Serber, New Hope, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 27, 1978, Ser. No. 964,221
Int. Cl.[2] F25B *13/00, 41/00, 49/00*
U.S. Cl. 62—209 **6 Claims**



1. A wrong operational mode detector and control system (hereinafter "control system") for a reverse cycle refrigeration system (hereinafter "system") for heating and cooling a building wherein said system comprises refrigerant compression means, an indoor coil, an outdoor coil, and refrigerant conduit means connecting said compression means and said coils, said control system comprising:

outdoor air temperature sensing means (hereinafter "TODAS") having an output indicative of outdoor air temperature (hereinafter "TODA");

outdoor coil temperature sensing means (hereinafter "TODCS") having an output indicative of the temperature of said outdoor coil (hereinafter "TODC");

building temperature sensing means (hereinafter "STAT") having outputs indicative of demands for heating and cooling of said building; and

means connecting said STAT outputs to said refrigerant compression means so as to cause operation thereof upon said demands for heating and cooling; and

controlling means having operative connections to said TODAS, TODC, and STAT so as to receive the outputs thereof and to said refrigerant compression means so as to selectively control the operation of said refrigerant compression means, said controller means being effective to inhibit the operation of said refrigerant compression means as controlled by said STAT upon the following conditions being satisfied:

(1) STAT demanding heating, and

(2) TODC is greater than TODA by a predetermined amount.

4,211,090
HOUSEHOLD REFRIGERATOR WITH AIR CIRCULATION AND COOLING ARRANGEMENT

Robert B. Gelbard, and James R. Griffin, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 6, 1978, Ser. No. 966,911
Int. Cl.[2] F25B *5/00;* **F25D** *21/06, 11/02*
U.S. Cl. 62—283 **5 Claims**

1. In a refrigerator cabinet including a first food storage compartment to be maintained at a temperature above freezing and a second food storage compartment to be maintained at a temperature below freezing, an air circulating and cooling arrangement comprising:

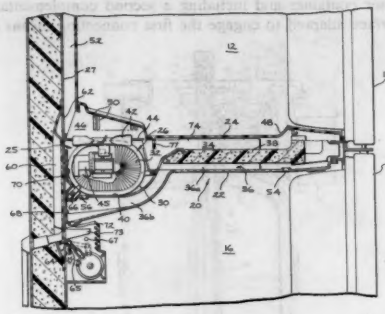
(a) a partition dividing said compartments including a first wall portion defining the upper wall of said first compartment, and a second wall portion defining the lower wall of said second compartment;

(b) a divider element arranged intermediate said first and second wall portions;

(c) a chamber in the rear portion of said partition intermediate said second wall and said divider;

(d) an evaporator in said chamber mounted in heat exchange relationship with at least a portion of said divider element;

(e) means defining a first passage arranged between said second wall portion and divider;



(f) means defining a second passage arranged between said first wall portion and said divider;

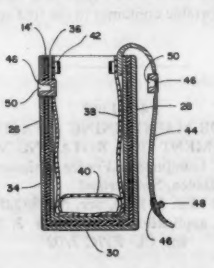
(g) means for circulating air over said evaporator and through said compartments; and

(h) means for directing air from said first compartment to said second passage and thereafter over said evaporator in said chamber, whereby moisture is removed from the air recirculating from said first compartment air as it scrubs against said colder divider element portion in heat exchange relationship with said evaporator.

4,211,091
INSULATED LUNCH BAG

June H. Campbell, P.O. Box 4162, Foster City, Calif. 94404

Filed Feb. 23, 1979, Ser. No. 14,488
Int. Cl.[2] F25D *3/08*
U.S. Cl. 62—372 **7 Claims**



1. A durable, flexible insulated lunch bag comprising a top, a front wall, a rear wall, a bottom wall, a pair of side walls, each of said walls comprising an outer wall and an inner wall, a layer of an insulating material disposed substantially evenly between the outer and inner walls, said inner walls including a liner disposed in the interior of said bag, means for opening and closing the bag adjacent the top thereof, and a carrying means affixed to the upper portion of said bag, wherein said bag is of the open top type construction and said means for opening and closing the bag comprises a pliable adhesive tape fastener secured to said bag around the periphery thereof to at least one side and rear wall and being detachably adherent to the fas-

tener disposed on the opposite wall of said bag, and wherein the overall length of said bag is reducible to about one third when the empty bag is folded on itself.

4,211,092

SPACE HEATING INSTALLATION

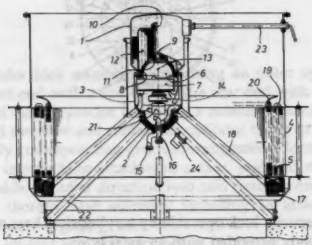
Ludwig Ludin, Kesselackerweg, CH 5611 Anglikon-Wohlen, Switzerland; Nikolaus Laing, Hofener Weg 37, D 7148 Remseck 2; Oliver Laing, Hofener Weg 37, D 7148 Remseck 2, and Karsten Laing, Hofener Weg 37, D 7148 Remseck 2, all of Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,289

Claims priority, application Austria, Sep. 22, 1977, 6810/77; Sep. 22, 1977, 6811/77

Int. Cl.² F25B *3/00*

U.S. Cl. 62—499 **19 Claims**



1. A heat pump comprising a compressor having a rotatable casing and a rotatable impeller; a liquid heat exchanger and an air heat exchanger combined with said rotatable casing to form a rotatable unit; a bearing rotatably mounting said rotatable unit with the center of gravity of said unit being located above said bearing; a magnetically active rotor connected to said impeller; a stator spaced from and providing a drive torque to said rotor whereby when said rotor is rotated, said unit will rotate by the reaction moment of said impeller; and a magnetically pervious separation wall situated between said stator and said rotor.

4,211,093

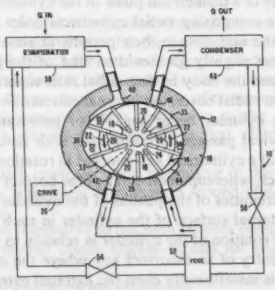
VAPOR CYCLE COOLING SYSTEM

Lawrence L. Midolo, 1475 Black Oak Dr., Centerville, Ohio 45459

Filed Apr. 4, 1979, Ser. No. 26,865

Int. Cl.² F25B *31/00*

U.S. Cl. 62—505 **3 Claims**



1. A rotary vane cooling system including a two phase coolant, comprising: a vaporizable liquid working medium within said cooling system; an evaporator having an inlet and an outlet; a condenser having an inlet and an outlet; a two stage rotary vane compressor, including means for connecting the outlet of a first compressor stage to the inlet of a second compressor stage; said two stage rotary vane compressor being connected between the outlet of said evaporator and the inlet at said condenser; an expansion device connected between the outlet of said condenser and the inlet of said evaporator; said two stage compressor including a housing having a chamber therein, a rotor on a rotatable shaft; said rotor being positioned within said chamber; said rotor having a plurality of slidable vanes which form a plurality of cells, within said chamber, which change in volume as the rotor rotates; said plurality of cells including a plurality of cells on one side of said rotor which corresponds to said first compressor stage and a plurality of cells on the other side of said rotor which corresponds to said second compressor stage; said cells corresponding to said first compressor stage having a greater maximum volume than the cells corresponding to said second compressor stage; and means for supplying at least a portion of the vapor resulting from the expansion in said expansion device to the inlet of the second compressor stage for providing cooling in the inlet of said second compressor stage.

4,211,094

STEAMING PLANT FOR THE TREATMENT OF CONTINUOUS WEBS OF TEXTILE MATERIAL CONTAINING THERMOPLASTIC SYNTHETIC FIBERS

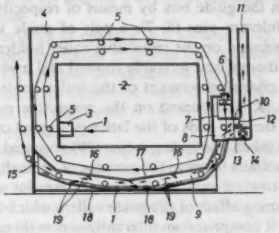
Klaus Meisen, Krefeld, Fed. Rep. of Germany, assignor to Kleinewefers Gesellschaft mit beschränkter Haftung, Krefeld, Fed. Rep. of Germany

Continuation of Ser. No. 660,358, Feb. 23, 1976, abandoned. This application Oct. 6, 1977, Ser. No. 840,030

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1975, 7505591[U]

Int. Cl.² D06B *3/10, 23/14*

U.S. Cl. 68—5 D **6 Claims**



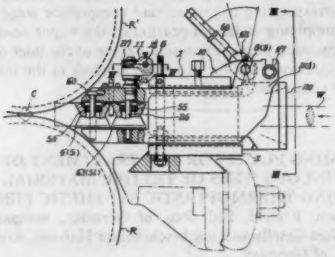
1. A steaming plant for the treatment of a continuous web of pile textile material containing thermoplastic synthetic fibers, especially polyacrylicnitrile fibers, which includes in combination: a steaming chamber adapted to be connected to a supply of steam, a cooling device arranged to receive outside air as cooling medium, supporting and conveying means arranged to said steaming chamber and said cooling device for supporting and conveying the web of textile material to be treated through said steaming chamber and said cooling device, said cooling device being located past said steaming chamber when viewed in the direction of the movement of a web of textile material and having air circulated in the opposite direction to movement of said web, an intermediate chamber between said cooling device and steam chamber through which said web passes and open to flow of air from said cooling device, exhaust means including a flue stack with a passage thereafter from said intermediate chamber and a control flap for fine adjustment in said passage to regulate air flow from said intermediate chamber to said stack for controlling flow of air from said cooling device, and a second exhaust passage in strongly different suction relationship and in immediate vicinity of said control flap from said intermediate chamber and a blower in said second passage.

4,211,095

STOCK RESTRAINING EFFECT ADJUSTING MECHANISM OF A STOCK GUIDE FOR USE WITH A ROLLING MILL

Hiroaki Shimada, Sapporo, Japan, assignor to Kotobuki Sangyo Kabushiki Kaisha, Sapporo, Japan

Filed Jan. 8, 1979, Ser. No. 1,887
Int. Cl.[2] B21B 39/16
U.S. Cl. 72—250 3 Claims



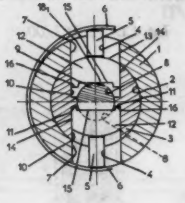
1. In a roller type stock guide for a rolling mill which includes a guide box (1), a pair of roller holders (2, 3) pivotally mounted on the guide box by means of respective vertically extending fulcrum pins (6, 7), a pair of guide rollers (4, 5) rotatably mounted on the respective roller holders at the forward ends thereof and movable toward and away from each other with pivotal movement of the roller holders, a pair of pivot studs (8, 9) mounted on the respective roller holders adjacent to the rear ends of the latter in aligned opposite relation to each other, and spring means (49) arranged between the two roller holders to serve the purpose of normally urging the pivot studs toward each other, a mechanism for adjusting the stock restraining effect of the guide rollers which is characterized in that it comprises: an internally screw-threaded tubular member which is held against axial movement between the pair of right and left support brackets (10, 10) formed on said guide box in relation to said pivot studs (8, 9) coaxially therewith and including a first tubular section (45) internally formed with lefthand screw-threads, a second tubular section (46) internally formed with righthand screw threads, and a ratchet wheel (44) formed between said first and second tubular sections (45, 46) and being integral therewith; a pair of lefthand and righthand screw-threaded shafts (15, 16), each of them being supported against rotation but being slidable in relation to said pair of support brackets, threadably fitted in said first and second internally screw-threaded tubular sections (45, 46) and held in abutting engagement with the abutting points (P_1, P_2) of the respective pivot studs (8, 9) a pair of ratchet pawls (17, 18) pivotally movable into and out of meshing engagement with said ratchet wheel (44) in an alternate fashion, a manually operable control cam (19) for actuating said ratchet pawls alternately into and out of meshing engagement with said ratchet wheel, and a notching lever handle (60), extending in tolerable length above the top of said guide box along a plane including the longitudinal axis of said stock guide, and being manually operable to intermittently rotate said ratchet wheel (44) through the intermediary of either one of said ratchet pawls.

4,211,096

SECURITY LOCK WITH PISTONS AND CYLINDRICAL KEY

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., France

Filed Jan. 30, 1978, Ser. No. 873,621
Claims priority, application France, Jan. 31, 1977, 77 02553
Int. Cl.[2] E05B 29/06
U.S. Cl. 70—364 R 3 Claims



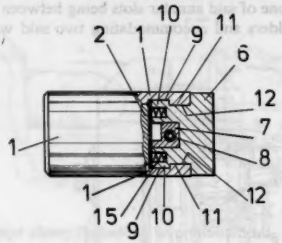
1. A security lock operable by a cylindrical key, comprising:
(a) a body provided with an axial bore,
(b) a cylinder of cylindrical form rotatable within said axial bore and having an axial cylindrical key passage therein,
(c) piston means sliding in radial bore formed in said body,
(d) springs for urging said pistons towards the said axial bore and
(e) pistons means radially sliding within said cylinder and each co-operating, in one angular position of the cylinder in relation to the body, with the extremity of a piston means of the body, said pistons of the cylinder being constituted by flat pieces the peripheral extremity of which is shaped in accordance with a portion of the generating circumference of the said cylinder, the lateral edges of the said piece being rectilinear and parallel and its internal edge comprising a central line tangentially contacting the cylindrical key when inserted and the notches which the latter comprises, the said central line being surrounded by two abutment lines, the said flat pieces being slidable in radial slots of the cylinder of width slightly greater than that of the said flat piece, the said radial slots being of such depth that they cease in the vicinity of a diametrical plane of the cylinder, the cylinder further comprising radial cylindrical holes superimposed upon the said slots in their peripheral zone and having a diameter slightly greater than that of the pistons of the body and the body having radial slots superimposed upon the said radial bores, the internal extremities of the pistons of the cylinder being capable of penetrating line axial cylindrical passage to co-operate with notches of coded depth of a cylindrical key coupled in rotation with the said cylinder, whereupon on entry of the correct key the external extremities of the pistons of the cylinder lie flush with the external surface of the cylinder in such manner as to permit rotation of the cylinder in relation to the body, and upon entry of an incorrect key where the corresponding notch is insufficiently deep the external extremities of the piston of the cylinder enter said radial slots in said body to effect locking of the cylinder relative to the body, and upon entry of an incorrect key where the corresponding notch is too deep the internal extremities of the pistons in the body enter said cylindrical holes in said cylinder to effect locking.

4,211,097

CYLINDER LOCK ASSEMBLY

Jaakko Martikainen, Joensuu, Finland, and Kurt Pousar, Glenview, Ill., assignors to Oy Wartsila AB, Helsinki, Finland

Filed Dec. 15, 1978, Ser. No. 969,838
Int. Cl.[2] E05B 9/04
U.S. Cl. 70—373 6 Claims



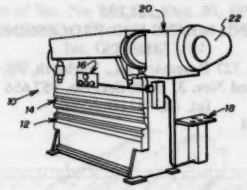
1. A cylinder lock assembly comprising an outer cylinder having a front end with a key hole and a rear end with an end member, said outer cylinder enclosing a rotatable inner cylinder, said end member and said outer cylinder being provided with mutually corresponding groove arrangements forming an axially fully interlocking attachment means, said end member being insertable in radial direction into said outer cylinder for attaching it thereto, said assembly including an attachment locking member engaging said outer cylinder and said end member for locking said end member to said outer cylinder in a radial direction.

4,211,098

SOLID STATE CONTROL SYSTEM FOR MECHANICAL-PRESS

Kurt K. Luenser, Desoto, Tex., assignor to Verson Allsteel Press Company, Dallas, Tex.

Filed Sep. 5, 1978, Ser. No. 939,653
Int. Cl.[2] B21J 9/20
U.S. Cl. 72—21 42 Claims



1. A control system for a machine having a drive system, a mechanism selectively driven by the drive system, and selectively engageable clutch for mechanically connecting the drive system to the mechanism, said control systems comprising:

input means for producing a plurality of command signals;

a first clutch control system responsive to the command signals for selectively producing a first clutch engage signal;

a second clutch control system responsive to the command signals for selectively producing a second clutch engage signal; and

output means responsive to the simultaneous presence of the first and second clutch engage signals for engaging the clutch,

wherein said output means comprises:

first gate means for producing first gate signals in response to the first clutch engage signal;

second gate means for producing second gate signals in response to the second clutch engage signal;

gate check means responsive to the first and second gate signals for producing a false signal and response to the presence of a predetermined combination of the first and second gate signals;

said first and second clutch control systems being disabled by the fault signal to prevent the production of the first and second clutch engage signal; and

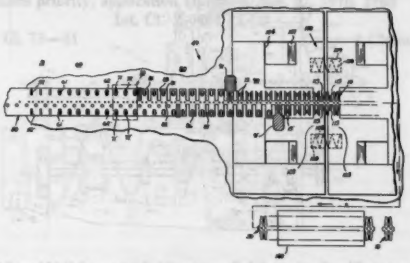
output means responsive to the first and second gate signals for engaging the clutch.

4,211,099

APPARATUS FOR MAKING SLOTTED BEAM CONTACT ELEMENTS

Charles McGonigal, Grayson, and James E. Voytko, Atlanta, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 822,969, Aug. 8, 1977, Pat. No. 4,136,628, which is a continuation-in-part of Ser. No. 710,358, Jul. 30, 1976, abandoned. This application Nov. 30, 1978, Ser. No. 965,538
Int. Cl.[2] B21D 28/10
U.S. Cl. 72—47 12 Claims



1. An apparatus for making a slotted beam content element, which comprises:

means for forming an opening in a metallic strip;

means for applying forces to at least one portion of the strip adjacent the opening to reshape said portion;

means for forming a bifurcated beam in the strip with at least portions of the furcations of the beam encompassing the reshaped opening; and

means for moving the furcations toward each other to cause the portions encompassing the opening to define a slot of predetermined width characteristics suitable for receiving a conductor and for establishing electrical contact between the furcations and the conductor.

4,211,100

WIRE SPRING FORMING MACHINE

Willard D. Sykes, 5613 152nd St. North, Hugo, Minn. 55038

Filed Nov. 24, 1978, Ser. No. 963,192
Int. Cl.[2] B21F 3/02
U.S. Cl. 72—131 9 Claims

1. A wire spring forming machine, having in combination

a support structure,

driving means carried by said support structure,

a wire guide member carried by said support structure,

endless rotary wire feeding means running continuously in a wire feeding direction being normally in a non-wire-feeding position,

said first mentioned means driving said wire feeding means,

an electronic control device predetermining the length of wire fed for each spring formed,

a hydraulic valve in operative relationship with said wire feeding means and in circuit with a hydraulic pump,

an control member providing communication between said pump and said valve,

said control device being in circuit with said electric control member normally causing said valve to move said wire feeding means into wire feeding position,

a wire cutting member in operative relationship with said wire guide member,

a hydraulic valve in circuit with said pump and being in operative relationship with said wire cutting member,

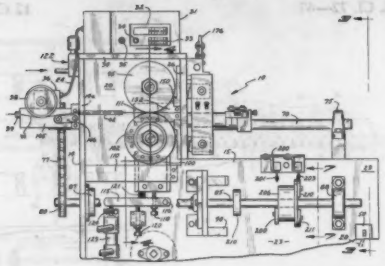
said electric control member providing communication between said valve and said hydraulic pump,

said control device being in circuit with said electric control member to cause said first mentioned valve to release said wire feeding means to non-wire-feeding position and to actuate said second mentioned valve to cause said wire cutting member to cut the wire fed through said wire guide as each predetermined length of said wire is fed through said wire guide,

means carried by said structure having a wire forming tool mounted thereon,

a third hydraulic valve in circuit with said hydraulic pump,

said electric control member providing communication between said third hydraulic valve and said pump,



means having a cam hub mounted thereon, and being driven by said driving means,

means carrying a pair of switches in operative relationship with said cam hub,

a cam lobe carried on said hub engaging one of said switches, said one of said switches being in circuit with said control device to re-set the same, said lobe being arranged and constructed to engage said switch as each predetermined length of said wire is cut,

the other of said switches being in circuit with said control member and said third mentioned valve,

a cam lobe carried by said hub engaging said other of said switches to operate said third mentioned valve to engage said means having said wire forming tool mounted therein for engagement of said wire fed through said wire feed guide, and

said last mentioned cam lobe being designed to have said tool engage said wire to provide a particular form of spring.

4,211,101

MILL STAND ROLL ASSEMBLY

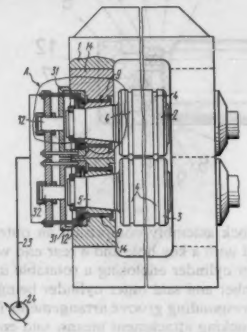
Nikolai I. Krylov, 1 Novokuzminskaya ulitsa, 25, kv. 26, Moscow; Ilya A. Toder, Oktyabrsky proezd, 339a, kv. 8, Ljubertsy; Leonid I. Danilov, ulitsa Vereschagina, 51, kv. 8, and Gennady I. Pinsky, ulitsa Parkovaya, 38, kv. 37, both of Cherepovets, all of U.S.S.R.

Filed Feb. 5, 1979, Ser. No. 9,523

Int. Cl.[2] B21B *31/18*

U.S. Cl. 72—247 **10 Claims**

1. A mill stand roll assembly comprising: a mill stand roll housing; chocks secured to said housing and each having a hole for supporting a grooved roll; two washers, disposed between spacer rings, are provided in a bearing housing on each of said chocks and are disposed in a parallel and spacial relationship with one another and said washers are on both sides of a hole of said housing; one of said spacer rings being centrally disposed between said two washers and having a plurality of radial holes communicating with said hole in said housing; a thrust, hydrostatic bearing mounted in said housing and placed in each of said chocks; said grooved rolls comprising two and each having a neck, mounted in said hydrostatic bearings, a drive for said grooved rolls; a pair of thrust shoulders on each of said necks of said grooves rolls and having end faces; annular slots or gaps formed on each side of said thrust shoulders and being substantially coaxially with a respective grooved roll; one of said annular slots being between said pair of thrust shoulders and accommodating two said washers; a



source of liquid having an adjustable flow as a function of the displacement of said grooved rolls; and thrust disks for each of said thrust hydrostatic bearings disposed at the outer end faces of each pair of said shoulders and being substantially in parallel therewith and forming with said thrust shoulders said annular slots or gaps which are in communication with said source of liquid through said holes in said housings, whereby a hydrostatic pressure field of said liquid is developed on a thrust shoulder for balancing an applied axial load on said grooved rolls during use of said assembly.

4,211,102

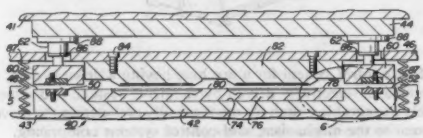
METHOD AND MEANS FOR PROCESSING METAL SHEETS

Arnold Hurvitz, 327 Rosemary La., Narberth, Pa. 19072

Filed Nov. 3, 1978, Ser. No. 957,656

Int. Cl.[2] B21D *22/00*

U.S. Cl. 72—304 **26 Claims**



1. A method of processing flat metal sheets which may have apparent or latent defects for providing embossed sheets with flat regions which includes the steps of

applying tensile stress to an intermediate region of a substantially flat sheet of metal by engaging the sheet on opposite sides of said region while maintaining the sheet flat and its ends fixed with respect to each other,

deforming a portion of the intermediate region of said sheet while the remaining undeformed portion of the sheet is maintained flat and the tensile stress is applied, and

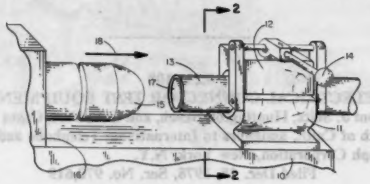
removing the tensile stress applied to said sheet to provide a metal sheet with intermediate deformed and undeformed flat portions with the undeformed portion being substantially in the same plane.

4,211,103

DOUBLE TAPER CLAMP

Samuel Grimaldo, Thousand Oaks, Calif., assignor to American Machine & Hydraulics, Inc., Newbury Park, Calif.

Filed Dec. 8, 1978, Ser. No. 967,701
Int. Cl.³ B21D *41/02*
U.S. Cl. 72—316 5 Claims



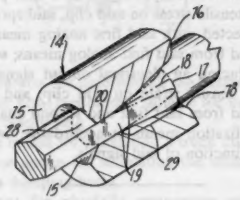
1. A pipe clamp including, in combination:
(a) fixed means surrounding at least a portion of a pipe to be clamped; and
(b) axially movable means engaging said portion of said pipe in a position sandwiched between said fixed means and said portion of the pipe, the opposing respective exterior and interior surfaces of said movable means and fixed means being sloped relative to the longitudinal axis of said pipe in a first direction along one axial portion and in an opposite direction along a second axial portion, whereby either pulling or pushing of said pipe in an axial direction moves said movable means axially to result in a camming action on said movable means by said opposing surface of said fixed means to urge the pipe engaging portion of said movable means into tighter engagement with said pipe and thus prevent further axial movement of said pipe.

4,211,104

COLD DRAWING DIE FOR DRAWING POLYGONAL SHAPES

Robert E. Barnabo, Bloomfield Hills, and Karl J. Hyslop, Westland, both of Mich., assignors to Barnabo Steel Corporation, Canton, Mich.

Continuation of Ser. No. 866,129, Dec. 30, 1977, abandoned.
This application Mar. 14, 1979, Ser. No. 20,376
Int. Cl.² B21C *3/04*
U.S. Cl. 72—467 7 Claims



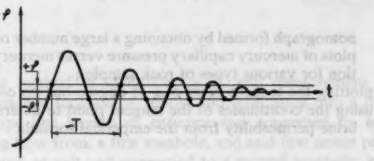
1. A cold drawing die for deforming a solid round bar into a desired polygonal shape wherein a drawing force is applied by pulling the bar through the die and wherein the improvement comprising: a body of high hardness material having opposite faces and adapted to be fixed in a die holder, an axial passage formed in said body between said faces and having an entry zone, and exit zone and a polygonal bearing zone mediate said entry and exit zones; said entry zone being characterized by an initially circular cross-section of such size as to make full circumferential contact with the bar, said entry zone further having at least one semi-elliptical shaping plane, the number of said shaping planes being equal to the number of straight sides in the desired shape, said shaping planes being tangent on one end to said initial circular cross-section and increasingly gradually in width, but angled inwardly from said circular cross-section toward said bearing zone; each said angled shaping plane being configured to provide a gradually decreasing angle of contact with a bar being deformed thereby and taken relative to the axis of said passage, the angularity of said shaping plane lying in the range of about 0° to 12° throughout the effective length thereof; said bearing zone having straight sides contiguous to the ends of said semielliptical shaping planes; said exit zone being angled radially outward from said bearing zone, whereby continuous full circumferential contact is maintained between the die and the stock throughout the drawing process.

4,211,105

METHOD FOR MEASURING THE DAMPING COEFFICIENT OF TORSIONAL-VIBRATION DAMPERS

Imre Z. Szabó; Kornél Nagy, and Csaba Finta, all of Győr, Hungary, assignors to Magyar Vagon-és Gépgyár, Győr, Hungary

Division of Ser. No. 789,095, Apr. 20, 1977, Pat. No. 4,166,377.
This application Nov. 17, 1978, Ser. No. 961,568
Claims priority, application Hungary, Apr. 27, 1976, 2765
Int. Cl.² G01M *13/00*
U.S. Cl. 73—11 4 Claims



1. A method for quickly checking the damping coefficient of torsional-vibration dampers that are filled with a viscous liquid and are provided with a swing ring, for purposes of quality control of a damper of a given nominal geometry that is being tested, comprising the steps of: determining permissible limit values β'min and β'max of a torsional-vibration damping coefficient, between which values the quality of the damper is acceptable; establishing a characteristic curve of a relation between the damping coefficient and the number of vibrations of the decay from a determined initial amplitude to a second determined amplitude within a freely oscillating torsional-vibration system into which the damper is fitted for the testing, having one degree of freedom, i.e. which system includes a disc that constitutes a mass and a torsional shaft that constitutes a spring with a given stiffness; tuning the system by changing one of the mass of the disc and the spring stiffness of the torsional shaft to achieve a well measurable relation within the range of interest between the damping coefficient and the number of vibrations; producing free oscillation with damping within the system with the damper fitted in so that the free oscillation takes place with the determined initial amplitude; measuring the number of the vibrations in the system upon the characteristic curve and taking the measured number as a basis between permissible limit values n_{min} and n_{max} to verify an acceptable quality of the damper, while an inferior quality is being declared at measured values that lie outside the limit values.

4,211,106

ESTIMATES OF PERMEABILITY FROM CAPILLARY PRESSURE MEASUREMENTS

Benjamin F. Swanson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

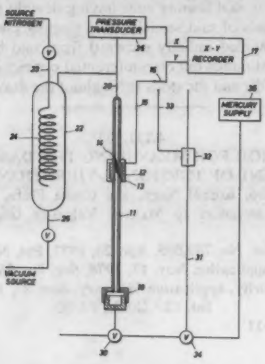
Filed Sep. 20, 1978, Ser. No. 944,046
Int. Cl.² G01M *3/00*
U.S. Cl. 73—38 10 Claims

1. A method for determining the permeability of a small rock sample comprising:

obtaining a series of measurements of mercury saturation as a percentage of the bulk volume of the sample versus the mercury capillary pressure applied to the same;

plotting said series of measurements on a log-log scale chart;

determining the brine permeability of the sample using a



nomograph formed by obtaining a large number of log-log plots of mercury capillary pressure versus mercury saturation for various types of rock samples;

plotting the tangent point of a 45-degree line on each plot;

using the coordinates of the tangent point to determine the brine permeability from the emperical formula

$$K_w = 355 \frac{(S_b)}{P_c A} 2.005$$

where K_w is the brine permeability and S_b and P_c are the saturation and capillary pressure at the tangent point; and,

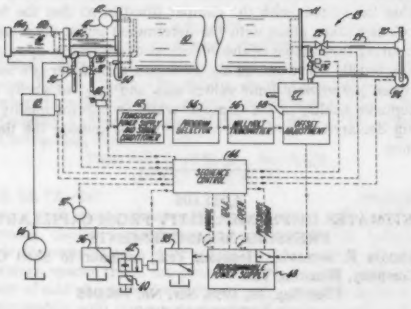
plotting said 45-degree tangent lines on a nomograph having coordinates of capillary pressure versus saturation on two sides and brine permeability on the two opposite coordinates.

4,211,107

PIPE TESTING MACHINE WITH CLAMPING PRESSURE KEYED TO HYDROSTATIC TEST PRESSURE

Michael R. Sleeter, Millbury, Ohio, and James C. Dehring, Tecumseh, Mich., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 17, 1977, Ser. No. 759,619
Int. Cl.² G01M *3/04*
U.S. Cl. 73—49.6 **7 Claims**



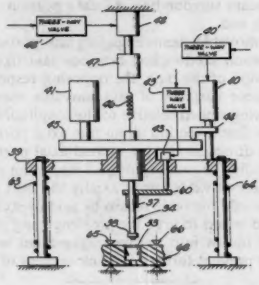
1. A pipe testing machine comprising a pair of spaced clamping plates, means for applying clamping pressure to the clamping plates to seal opposite ends of a test pipe against internal test pressure, means for subjecting the test pipe to internal fluid pressure, means for continuously sensing the magnitude of the internal pressure in the pipe and providing an electrical signal varying in magnitude in accordance with the magnitude of the internal pressure in the pipe, and electrically adjustable modulating valve means for receiving the electrical signal and proportioning the clamping pressure to the sensed internal pressure.

4,211,108

ELECTRICAL CONNECTOR TEST EQUIPMENT

Lamont J. Seitz, Huntington Beach, and Geza Fort, Costa Mesa, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,619
Int. Cl.² G01N *3/10*
U.S. Cl. 73—141 AB **4 Claims**



1. Apparatus for investigating the resistance to separation of electrical connector parts including an insulator havin a bore, and an electrical contact retention clip fixed relative to the insulator inside the bore, said apparatus comprising: releasable means actuable to hold the insulator in a fixed position; means to engage the clip; tension means to pull said engagement means in a direction to urge said clip out of said insulator bore, said tension means including a spring having one end connected with said engagement means; first analog means for producing an electrial output signal as a first predetermined function of the tensile stress on said clip, said spring having its other end connected with said first analog means; utilization means connected from said first analog means; second analog means for producing an electrical output signal which is a function of the tensile strain on said clip; and third analog means connected from said first and second analog means to actuate said utilization means in accordance with a second predetermined function of said signals.

4,211,109

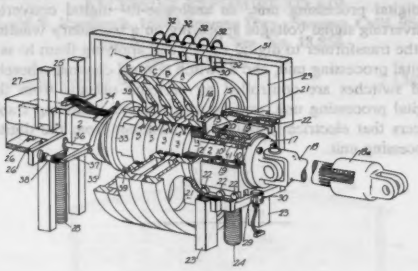
MULTIPLE PLANE ROAD WHEEL FOR USE WITH TIRE MEASURING AND CORRECTING APPARATUS

Theodore Ongaro, Columbus, Ohio, assignor to Ongaro Dynamics, Ltd., Columbus, Ohio

Filed Jan. 18, 1979, Ser. No. 4,462
Int. Cl.² G01M *17/02*
U.S. Cl. 73—146 **9 Claims**

1. A multiple plane road wheel for use in apparatus for correcting rubber tires and the like wherein the periphery of the rotating tire being corrected is in contact with the road wheel throughout the width of the tire tread, said road wheel comprising a series of uniform diameter wheel discs, means mounting said wheel discs in side-by-side relation for independent rotation about a common axis of rotation, sensor means

associated with each of said wheel discs, said sensor means being positioned to sense forces generated by the rotating tire



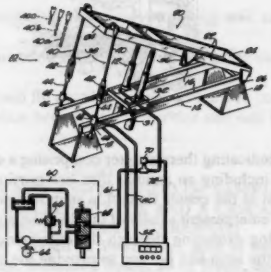
and transmitted to the wheel discs in the peripheral areas of the tire contacted by each of said wheel discs.

4,211,110

METHOD AND APPARATUS FOR CERTIFYING THE OUTPUT TORQUE CURVE OF A HYDRAULIC HOIST FOR USE IN DUMP BODY APPLICATIONS

Norman J. Glomski, New Berlin, Wis., assignor to The Heil Company, Milwaukee, Wis.

Filed Mar. 9, 1979, Ser. No. 19,105
Int. Cl.[2] G01M *19/00*
U.S. Cl. 73—168 16 Claims



1. Test apparatus for determining the output torque exerted by a hydraulic hoist mechanism suitable for use in dump body applications, comprising

base frame means for simulating a truck chassis,

upper frame means for simulating the under-structure portion of a dumping body,

hinge means for pivotally connecting said upper frame means to said base frame means, said pivotally connected base and upper frame means being adapted for allowing mounting of the hoist mechanism to said base and upper frame means so that the hoist mechanism can be rendered operative to pivot said upper frame means relative to said base frame means through a predetermined range of dump angles, and

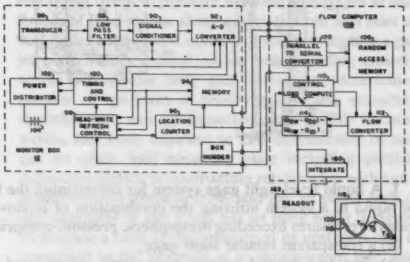
longitudinally adjustable restraining means displaced from said hinge means and connected to said base and upper frame means for restraining pivotal movement of said upper frame means to selected incremental dump angles within said predetermined range of dump angles, and including transducer means for providing an output proportional to the longitudinal force exerted on said restraining means.

4,211,111

INFILTRATION-INFLOW SEWER LINE ANALYZER

Peter D. Petroff, 4102 Piedmont Dr., Huntsville, Ala. 35802

Division of Ser. No. 811,557, Jun. 30, 1977, Pat. No. 4,116,061.
This application May 12, 1978, Ser. No. 905,196
The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.
Int. Cl.[2] G01F *1/00*
U.S. Cl. 73—195 2 Claims



1. The method of identification of, and measurement of magnitude and location of, inflow and infiltration into a first sewer pipe line having an entrance end connected to, and receiving flow from, a first manhole, and said first sewer pipe line having an exit end connected to a second manhole, and wherein there is a second sewer pipe line having an exit pipe line supplying flow to said first manhole comprising:

(A) making a first series of time identified measurements of the magnitude of flow out of said second pipe line into said first manhole for a series of discrete times during an average dry, no rainfall, period of a day;

(B) making a like time related series of flow measurements out of said second pipe line for a like period of a day during which rainfall occurs, including measurements from the time that a rainfall commences and extending for a period beyond the end of the rainfall;

(C) subtracting like timed measurements obtained with respect to paragraph (A) from those obtained with respect to paragraph (B);

(D) making a like timed and time identified series of magnitude of flow measurement out of said first pipe line into said second manhole for an average dry day;

(E) making a like timed and time identified series of magnitude of flow measurements out of said first pipe line into said second manhole for the period of measurement defined in paragraph (B);

(F) subtracting like timed measurements obtained in paragraph (D) from those obtained from measurements of paragraph (E) for (1) a period during said rainfall, and (2) a selected period following a rainfall;

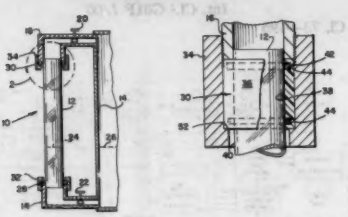
(G) subtracting like timed quantities obtained with respect to computations made in paragraph (C) from those obtained in accordance with paragraph (F), whereby differences for a rain period are representative of "inflow" into said first sewer pipe line, and differences for the period following a rain are measurements of "infiltration" into said first pipe line; and

(H) said flow measurements comprise a measurement of liquid heights within the exit end region of each said pipe line at a point from the exit end of that pipe line equal to at least the interior diameter of a said pipe line, and the region between the point of measurement and exit end of the pipe line in which said height is being measured is unobstructed by a weir.

4,211,112
GASKETS FOR LIQUID LEVEL GAGES

Orlin R. Norris, 36 Reservoir Rd., Parsippany, N.J. 07054

Filed Feb. 5, 1979, Ser. No. 9,199
Int. Cl.[2] G01F 23/02
U.S. Cl. 73—328 10 Claims

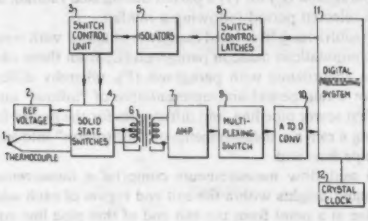


1. A liquid level sight gage system for determining the level of liquid in a system utilizing the combination of liquids and gases at pressures exceeding atmospheric pressure comprising:
(a) a transparent tubular sight gage;
(b) first and second tubular connecting means, said first connecting means being connected at one end thereof to said system, at a level above the liquid level and at the other end thereof to said tubular sight gage, said second connecting means being connected at one end thereof to said pressure system at a level below the normal liquid level and at the other end thereof to the other end of said tubular sight gage;
(c) first and second sealing means for substantially preventing the leakage of gas disposed between both ends of said tubular sight gage and said first and second connecting means; said sealing means including:
(i) a toroidally-shaped first member circumscribing said tubular sight gage, the inner diameter of said toroidally-shaped first member being in intimate contact with the circumference of said tubular sight gage prior to compression by said first and second connecting means; and
(ii) a second member circumscribing said tubular sight gage, said second member being retained by means provided by said first member and coming into intimate contact with the circumference of said tubular sight gage upon compression by said connecting means.

4,211,113
TEMPERATURE MEASUREMENT

Peter G. Harrison, Redbourne, England, assignor to Hawker Siddeley Dynamics Engineering, Ltd., Hatfield, England

Filed Mar. 28, 1979, Ser. No. 24,718
Claims priority, application United Kingdom, Apr. 5, 1978, 13260/78
Int. Cl.[2] G01K 7/02
U.S. Cl. 73—359 R 6 Claims

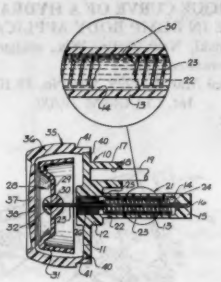


1. A temperature measuring system comprising a temperature sensing element delivering a signal voltage representative of temperature, a reference voltage source, a transformer, switches controlling the application of said signal voltage and the reference voltage to a primary winding of the transformer, a digital processing unit, an analogue-to- digital converter converting signal voltages appearing on a secondary winding of the transformer to digital signals and applying them to said digital processing unit, and a switch control channel whereby said switches are controlled by periodic outputs from the digital processing unit, said control channel including transducers that electrically isolate the switches from the digital processing unit.

4,211,114
INDICATING THERMOMETER

Stanley R. Hood, 11568 Sorrento Valley Rd., Suite 10, San Diego, Calif. 92121

Filed Nov. 6, 1978, Ser. No. 957,690
Int. Cl.[2] G01K 5/64
U.S. Cl. 73—363.9 13 Claims



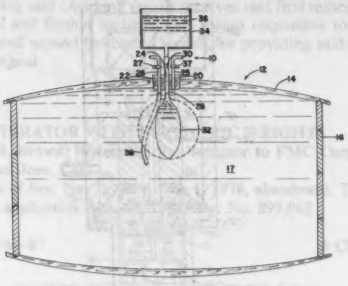
1. An indicating thermometer comprising a single piece main member including an annular disc like portion having an enlargement at the center thereof, a stem like portion extending from the enlargement axially of the disc like portion, a cylindrical opening extending through the enlargement and partially through the stem like portion to provide the stem like portion with a relatively thin tubular wall and an end wall, and a hole extending centrally from the opening partially through the end wall to provide a bearing in the end wall of the stem like portion, a temperature responsive assembly including a shaft, a plug having a central hole therethrough slidably and rotatably receiving the shaft to provide a bearing therefor, and a bimetallic helical coil secured at one end to the shaft adjacent one end thereof and secured at its other end to the plug, said temperature responsive assembly being inserted in the opening in the single piece main member at the enlargement of the disc like portion thereof and located therein with the bimetallic helical coil adjacent the tubular wall of the stem like portion, with said one end of the shaft journalled for sliding and rotation in the bearing in the end wall of the stem like portion, with the plug secured in the opening in the enlargement of the disc like portion, with the shaft journalled for sliding and rotation in the bearing of the plug, and with the other end of the shaft extending beyond the plug, an indicator member secured to said other end of the shaft adjacent the annular disc like portion of the main member to be rotated by the shaft in accordance with temperature conditions affecting the bimetallic helical coil, and a single piece annular cover member secured to the annular disc like portion of the single piece main member for enclosing the indicator member.

4,211,115

DEVICE FOR PROTECTING WINE AGAINST EXCESSIVE EXPOSURE TO AIR

Roald N. Engebreth, 15900 Sonoma Hwy., Sonoma, Calif. 95476

Filed Mar. 8, 1979, Ser. No. 18,854
Int. Cl.² G01N *1/10*
U.S. Cl. 73—421 B **7 Claims**



1. A device for protecting wine being aged in a wooden container comprising:

a closure adapted to cover an opening in the container;

a fill duct extending through said closure to terminate in inner and outer ends displaced from the inner and outer surfaces of said closure;

An inflatable bladder the interior of which is in communication with the inner end of said fill duct;

a reservoir of liquid of a specific gravity higher than that of wine;

means for positioning said reservoir above said container; and

a tube for connecting said reservoir to the outer end of said fill duct;

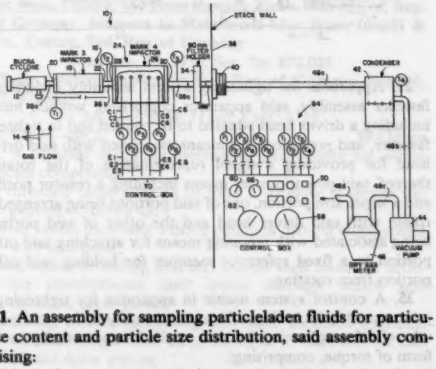
said tube and said fill duct being open to provide continuous communication between said reservoir and said bladder.

4,211,116

ASSEMBLY FOR AND METHOD OF SAMPLING PARTICLE-LADEN FLUIDS AND A CASCADE IMPACTOR USED THEREWITH

Michael J. Pilat; Edward B. Powell, Jr., both of Seattle, and John F. Thielke, Richmond Beach, all of Wash., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 21, 1978, Ser. No. 917,645
Int. Cl.² G01N *15/02*
U.S. Cl. 73—421.5 A **8 Claims**



1. An assembly for sampling particleladen fluids for particulate content and particle size distribution, said assembly comprising:

(a) At least one cascade impactor adapted to be placed within a fluid stream to be sampled, said impactor including

(i) a longitudinally extending tubular body having a fluid inlet at one end and a fluid outlet at the other end, and

(ii) a plurality of longitudinally spaced, successive particle collection stages located within said tubular body between said inlet and outlet and, together with said body, defining a fluid flow path from said inlet through successive particle collection stages to said outlet, said stages being constructed and positioned so as to cause successive drops in pressure between said stages as said stream of fluid moves along said path from said inlet to said outlet each of said collection stages including a gas jet plate fixedly located within and extending entirely across said tubular body and having a predetermined number of apertures of predetermined size extending therethrough, and an impactor plate fixedly located within said body adjacent to and downstream of said gas jet plate, said impactor plate including particle collection surface in confronting relationship with and a predetermined distance from said gas jet plate, each of said apertures in any given gas jet plate being designed to provide a ratio of the pressure at its upstream side as compared to the pressure at its downstream side, said ratio being selected below the critical pressure ratio of approximately 1.71 such that the gas stream flowing through said apertures does so at a rate which does not reach its critical flow rate above which the velocity of said fluid through said apertures does not increase with a drop in pressure from said upstream side to said downstream side;

(b) an arrangement for simulataneously monitoring the pressure at all of said stages, said arrangement including

(i) a plurality of first means, each of which includes a relatively inflexible tube associated with and having a first end located at and in fluid communication with a corresponding one of said stages for continuously sampling the pressure at that stage during the operation of said assembly, each of said tubes including a second end located in close proximity to its first end,

(ii) a plurality of second means, each of which is connected with and located in close proximity to the second end of a corresponding one of said tubes and responsive to its continuous sample of pressure for transducing said pressure sample to a corresponding electrical signal,

(iii) flexible conduit means for carrying said electrical signals from said transducing means to a location remote from said impactor, and

(iv) third means positioned at said remote location from said impactor, said third means being connected with all of said second means by said flexible conduit means and responsive to said electrical signal for indicating the pressure at each of said stages during operation of said assembly; and

(c) a control housing positioned at said remote location and including said pressure indicating third means.

4,211,117

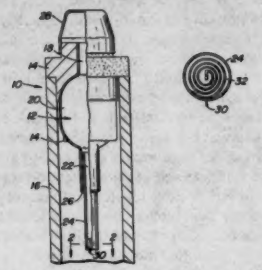
MOLTEN METAL SAMPLING DEVICE

Omer P. I. Curé, Diepenbeek, Belgium, assignor to Electro-Nite Co., Philadelphia, Pa.

Filed Dec. 18, 1978, Ser. No. 970,583
Claims priority, application France, Mar. 30, 1978, 78 09327
Int. Cl.² G01N *1/12*
U.S. Cl. 73—425.4 R **6 Claims**

1. A molten metal sampling device comprising a mold having an inlet and an outlet, a barrier means partially obstructing said outlet for solidifying molten metal on contact therewith while permitting escape of gases, said barrier means having a plurality of air passages whose total area is at least 50% of the

area of the outlet at the location of the barrier means, said barrier means being a pretensioned wound metallic strip exert-



ing pressure radially outwardly against the inner surface of said outlet.

4,211,118

ULTRASONIC FAULT DETECTOR

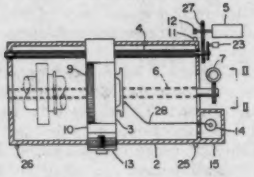
Yoshishige Sakurai; Hiroshi Yamada; Kuniharu Uchida, all of Yokohama; Kanekichi Suzuki, Tokyo, all of Japan; Ryoichi Ishii, deceased, late of Yokohama, Japan, and by Kyoko Ishii, administrator, Tendo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed May 16, 1978, Ser. No. 906,699

Claims priority, application Japan, May 18, 1977, 52-56322

Int. Cl.² G01N *29/04*

U.S. Cl. 73—592 **2 Claims**



1. An ultrasonic fault detector comprising a casing containing contact medium, an arm movable in said casing along the longitudinal axis thereof, a movable member rotatably secured to said arm, said movable member being divided into two or more parts, a plurality of probe heads mounted on the inside surface of said movable member, and means for feeding the contact medium to the operating surfaces of said probe heads.

4,211,119

SELF-STANDARDIZING PRESSURE SENSOR FOR USE IN AN ELECTRONIC FUEL CONTROL SYSTEM

William G. Wolber, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1978, Ser. No. 948,076

Int. Cl.² G01L *7/08*

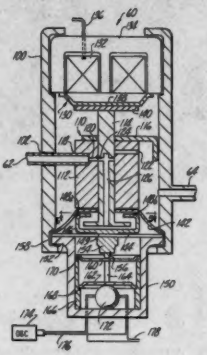
U.S. Cl. 73—721 **17 Claims**

1. A pressure sensor for sensing a first and second pressure for use with an electronic fuel control system having control logic comprising:

a sensor body defined by a substantially hollow member having an internal chamber and first and second external ports formed therein in communication with the first and second pressure, respectively, the internal chamber having a displaceable wall responsive to the pressure therein;

valve means, disposed within said internal chamber and movable between registering positions with the first and second external ports, for communicating a selected one of the ports with said internal chamber upon actuation into a registering position therewith;

actuator means, responsive to a command signal from the control logic selecting one of the external ports, for actuating the valve means into registry with the selected port; and



transducer means, responsive to displacement of the displaceable wall of said internal chamber, for producing an output signal representative of the displacement of the wall.

4,211,120

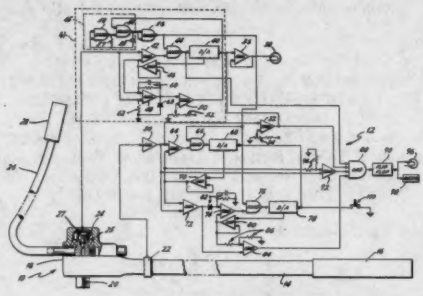
TIGHTENING APPARATUS

Angelo L. Tambini, Manor Kilbride, Ireland, assignor to SPS Technologies, Inc., Jenkintown, Pa.

Filed Aug. 8, 1978, Ser. No. 932,061

Int. Cl.² B25B *23/14*

U.S. Cl. 73—761 **99 Claims**



21. Apparatus for tightening a joint assembly including a fastener assembly, said apparatus comprising wrench means including a driver head adapted to be rotated and to tighten a fastener, and potentiometer means associated with said driver head for providing a signal representative of the rotation thereof, said potentiometer means including a resistor portion and a wiper arm portion, one of said portions being arranged to rotate with said driver head and the other of said portions being associated with retaining means for attaching said other portion to a fixed reference member for holding said other portion from rotating.

25. A control system usable in apparatus for tightening a joint assembly including a fastener assembly to its yield point wherein the tightening force is applied incrementally in the form of torque, comprising:

control means formed to be operatively associated with the

tightening apparatus for providing a control signal and including means for detecting a phenomena indicative of the yield point of the joint assembly and for providing a first indicating signal when said phenomena is detected; said control means further including checking means for determining that the fastener assembly is being tightened during an increment of tightening force application and for providing a second indicating signal indicative thereof, wherein said checking means receives said first indicating signal and further includes gate means responsive to said first and second indicating signals for providing said control signal.

4,211,121

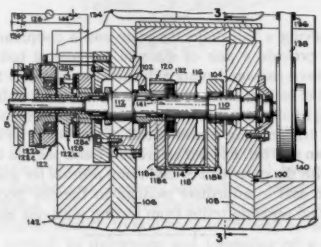
VIBRATOR WITH ECCENTRIC WEIGHTS

William R. Brown, Blairsville, Pa., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 719,634, Sep. 1, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,042

Int. Cl.[2] B06B *1/16*

U.S. Cl. 74—87 **8 Claims**



1. A vibrator comprising two members rotatable about a common axis, an eccentric weight connected to each of said members, means to drive one of said members, a clutch means connectable between said members in any angular relationship therebetween for rotation of both members when said one member is driven and said clutch means is engaged, means to disengage said clutch means while said one shaft is driven, and a brake means to retard the rotation of the other member when said clutch means is disengaged and said brake is applied to change from one angular relationship between said members to any desired different angular relationship between the members.

4,211,122

DRIVE ARRANGEMENT FOR AN AUTOMOTIVE WINDOW OPERATING MECHANISM

Peter Hess, Coburg, and Hans Rampel, Eicha, both of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany

Filed Jan. 20, 1978, Ser. No. 871,021

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1977, 2705627

Int. Cl.[2] E05F *11/48*; F16C *1/10*

U.S. Cl. 74—89.2 **30 Claims**

1. A window operating mechanism particularly for motor vehicles comprising:

a threaded cable adapted to have a window in driven engagement therewith;

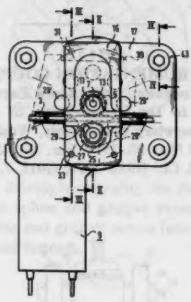
drive means including a drive pinion in driving engagement with said cable;

shell means including first and second shell members defining therebetween duct means through which said threaded cable passes;

fastening means connecting said shell members together, said fastening means being arranged to surround the axis of said drive pinion;

said duct means being defined by complementary duct halves, each formed respectively in opposite ones of said first and second shell members;

with at least one of said shell members being provided with a plurality of said duct halves arranged with a generally equivalent spacing relative to the axis of said drive pinion;



said fastening members being arranged in such a manner that each of said duct halves may be selectively brought into coincident relationship with a complementary duct half in the opposite shell member.

4,211,123

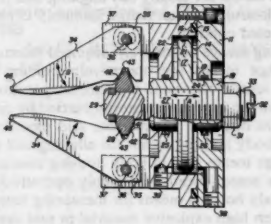
MOTION CONVERSION MECHANISM

James F. Mack, Flagstaff, Ariz., assignor to Mack Corporation, Flagstaff, Ariz.

Filed Mar. 13, 1978, Ser. No. 885,557

Int. Cl.[2] F16H *21/44*

U.S. Cl. 74—99 A **1 Claim**



1. In a motion conversion mechanism including

a housing,

spaced levers pivotally mounted on said housing at their respective inner ends and movable about said pivots toward and away from each other to grasp objects therebetween,

a reciprocal lever-drive member mounted in said housing, and

means operatively connecting said drive member and said lever for causing said levers to move about their respective pivotal mountings in response to reciprocal movement of said drive member,

the improvements in said motion conversion mechanism in which said means for operatively connecting said drive member to said levers comprise a pair including

(a) a tooth member extending perpendicularly to the axis of reciprocation of said reciprocable lever drive member,

(b) means defining a slot for receiving said tooth member and in driving engagement therewith,

said reciprocal lever-drive member carrying one of said pair and each of said spaced levers carrying the other of said pair,

(c) one of said pair having a convex cam surface formed integrally thereon,

(d) the other of said pair having a flat cam engaging surface formed thereon,

to provide rolling contact therebetween when said drive member is actuated for reciprocal movement, free of relative movement between the cam surface and the member on which it is integrally formed.

4,211,124

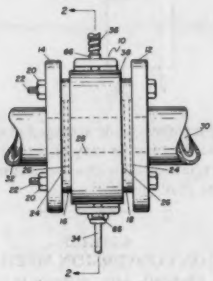
INSTRUMENTATION COUPLING

Wahling H. Ng, Rockaway, and Andrew Zaycer, Dover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,877

Int. Cl.[2] G01K *1/14*; G01L *7/02*

U.S. Cl. 73—345 **8 Claims**



1. An instrumentation flange assembly for measuring temperature and pressure in a jacketed conduit carrying molten high explosives material which comprises:

pipe flange means for axially self-aligning and fixedly holding said instrumentation flange assembly connected with said jacketed conduit;

body housing means operatively disposed intermediate said pipe flange means for operatively holding oppositely disposed sensors therein to measure temperature and pressure of molten explosive material carried by said conduit;

gasket means disposed intermediate said pipe flange means and said body housing means for aligning and sealing said pipe flange means to said body housing means;

temperature sensor means removably operatively disposed in said body housing means for measuring temperature of said molten high explosive material in said conduit;

pressure sensor means removably operatively positioned in said body housing diametrically opposite from said temperature sensor means, for measuring pressure of said molten high explosive material in said conduit;

insert adaptor means slidably disposed in said body housing means for operatively holding and sealing said temperature and pressure sensor means in said body housing means, said insert adaptor means preventing leakage of said molten high explosive material through said body housing; and

retainer member means for removably and fixedly holding said insert adaptor means in juxtaposition with said body housing means.

4,211,125

PLURAL LEAD BALL NUT SCREW ACTUATOR

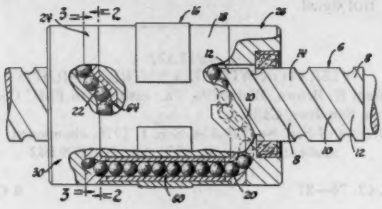
Robert L. Benton, Bay City, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 8, 1978, Ser. No. 913,869

Int. Cl.[2] F16H *1/18*

U.S. Cl. 74—424.8 R **2 Claims**

1. An actuator comprising a ball nut, an elongated screw having a pair of helical grooves in the outer surface thereof providing double leads and extending through said nut, said nut and screw forming a pair of separate helical ball races therebetween, said screw and ball nut being operatively connected by first and second separate endless ball trains respectively active in said races so that relative rotation of said screw and nut will produce smooth relative linear movement therebetween, a pair of intermediate ball passages transversing the major longitudinal dimension of said nut, ball return fixture means secured to opposite ends of said nut, each of said fixture



means having a ball deflector plate and a cooperating guide plate to provide a pair of discrete cylindrical ball passages therein, each passage having a diameter to facilitate the movement of the balls of said associated train therethrough and each including a ball ramp portion for moving the balls of the associated ball train exiting from the end of the nut in an axial path away from said ball nut and an arcuate track portion communicating with the outer end of said ramp portion for guiding said balls into said intermediate passage to thereby prevent said balls of said separate trains from mixing with one another.

4,211,126

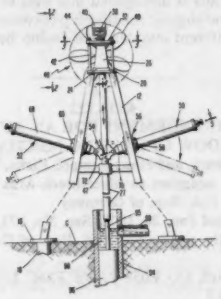
WIND MACHINE SYSTEM FOR PUSHING AND LIFTING LOADS AND HAVING IMPROVED COUNTERBALANCING

Richard K. Sutz, 19359 Dunbridge Way, Gaithersburg, Md. 20760

Filed Jun. 28, 1978, Ser. No. 919,763

Int. Cl.[2] F03D *11/00*; F04B *17/02*

U.S. Cl. 74—590 **10 Claims**



1. A wind machine system adapted for both lifting up and pushing down external loads, comprising:

a stationary elevated support;

transmission means mounted on said support and arranged for converting rotary motion to reciprocating motion;

a multiple blade rotor driven by wind and connected to said transmission means to drive the same;

a vertical shaft connected to said transmission means and cyclically reciprocated thereby for lifting up and pushing down said loads when said rotor rotates; and

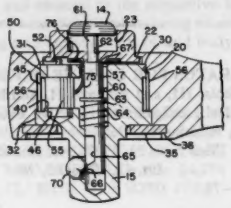
mounting means arranged to retain and restrain said transmission means on said support in such a way that said transmission means pushes said shaft down and pulls said shaft up with equal maximum forces during each cycle of reciprocation of said shaft.

4,211,127

RATCHET WRENCH REVERSING MECHANISM

Tito R. D'Oporto, Costa Mesa, and Delo K. K. Chun, Mission Viejo, both of Calif., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 19, 1979, Ser. No. 4,693
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—63 **8 Claims**



1. A ratchet wrench comprising:
a body having a core member rotatable therein;
cooperating ratchet means carried by said body and said core member and relatively adjustable to effect selectively clockwise and counterclockwise rotation of said core member in relation to said body to thereby accommodate the wrench to tightening and loosening of a threaded fastener or the like;
coupling means attached to said core member for releasably securing a drive means for a threaded fastener;
push button means extending through said core member for releasably securing a drive means to said coupling means;
a reversing knob operatively associated with said ratchet means to effect its relative adjustment;
said reversing knob being independent in operation of said release means;
a finger spring operated by said reversing knob for adjusting said ratchet means by rotation of said reversing knob;
said push button release means further comprises a push button disposed in a pocket of said reversing knob;
said push button is attached to a shaft which extends through said reversing knob and said core member and operatively contacts said ball retention member; and
said push button and said shaft are free to reciprocate in said reversing knob and said core member and said coupling means and said push button and said shaft are further free to rotate in said reversing knob and said core member.

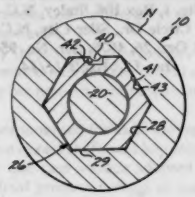
4,211,128

VEHICLE WHEEL LUG NUT APPARATUS

Mark J. Plumer, 4265 Marina City Dr., Marina Del Rey, Calif. 90291

Filed Jul. 17, 1978, Ser. No. 925,186
Int. Cl.² B25B *13/48*
U.S. Cl. 81—71 **7 Claims**

1. In combination, a threaded fastener for vehicle wheels having a head formed with a coaxial driving recess defined by polygonal straight sides; a wrench for engagement with said fastener to apply and remove said fastener with respect to a cooperating threaded member, said wrench having a coaxial post axially insertable within said recess to effect rotation of said fastener, said post having straight sides of polygonal configuration complimentary to said recess that drivingly engage said straight sides; and axially extending coding spline and groove means formed between the abutting surfaces of the straight sides of said driving recess and said post, a first clearance between said spline and groove means being greater than a second clearance between adjacent side edges, the straight



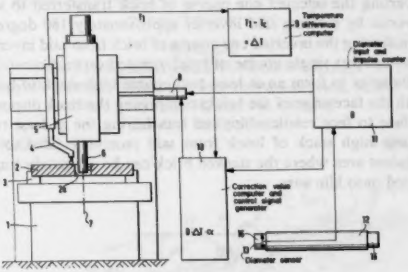
sides of said post drivingly engaging the straight sides of said recess before said spline and groove means can be engaged whereby said spline and groove means function solely to code said wrench to said fastener.

4,211,129

METHOD FOR PRODUCING A BORE

Helmut Wittkopp, Erkelenz; Heinz vom Dorp, and Theodor Lindgens, both of Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to W. Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,075
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747883
Int. Cl.² B23B *3/00, 35/00, 39/06*
U.S. Cl. 82—1 C **2 Claims**

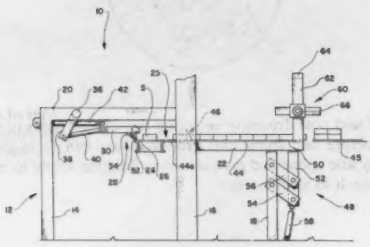


1. A method for producing a finish dimension of a prebored bore in a work piece, comprising the steps of: measuring the temperature in the immediate vicinity of said prebored bore directly prior to the finish machining to provide a measured temperature value representing the temperature of the prebored work piece directly before the finish machining; providing a reference temperature value; determining the difference temperature between said measured temperature value and said reference temperature value, determining the sign (positive or negative) of said difference temperature, producing a tool positioning control signal from the difference temperature and its sign, and correcting the position of a finishing tool solely in response to said control signal to provide said bore with a smooth, uninterrupted finish surface of the correct size.

4,211,130
METHOD AND APPARATUS FOR HANDLING AND STACKING BRICK

John G. Buckner, Rte. 2, Box 83, Ramseur, N.C. 27315; Cletus E. Lineberry, Rte. 1, Box 106, Staley, N.C. 27355, and Jimmy W. Harris, 618 Circle Dr., Siler City, N.C. 27344

Filed Oct. 26, 1978, Ser. No. 954,997
Int. Cl.[2] B28B *11/14*
U.S. Cl. 83—23 9 Claims



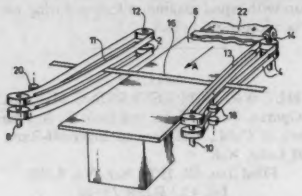
1. A method of handling and stacking brick in at least two high courses with respective faces of the brick being stacked face to face, said method comprising: delivering on an off bearing belt one brick slug after another to a brick cutting assembly disposed adjacent said off bearing belt; pushing each brick slug from said off bearing belt through said brick cutting assembly onto a receiving table so as to cut each individual slug into a plurality of bricks; continuing to push slugs from said off bearing belt through said brick cutting assembly such that accumulated cut brick are advanced across said receiving table; transferring selective brick, one course at a time, from said receiving table to an inverter by sliding cut brick from said receiving table onto an adjacent elevator, moving the elevator upwardly to a position adjacent said inverter where an outer gripping frame of said inverter surrounds the brick on said elevator assembly; closing the outer gripping frame about said brick on said elevator and lowering the elevator from the position adjacent said inverter so as to effectuate the transfer; inverting the selected one course of brick transferred to said inverter by rotating said inverter approximately 180 degrees; transferring the inverted one course of brick from said inverter onto another single course of brick situated on said receiving table so as to form an at least two course high stack of brick with the face edge of the bricks comprising the stack disposed in face to face relationship; and transferring the at least two course high stack of brick from said receiving table to an adjacent area where the stacked brick can be ultimately transferred onto kiln cars.

4,211,131
CUTTING OF CORRUGATED MATERIAL

Cyril P. Fenn, and William H. Thelwell, both of St. Helens, England, assignors to Fibreglass Limited, St. Helens, England

Filed May 3, 1978, Ser. No. 902,283
Claims priority, application United Kingdom, May 4, 1977, 18677/77
Int. Cl.[2] B23D *53/08, 55/04*
U.S. Cl. 83—56 16 Claims

1. A method of cutting a corrugated material into a plurality of channel-shaped bodies, comprising conveying the corrugated material along a conveyor path by means of moving guide members extending substantially parallel to the conveyor path, and which hold the transverse edges of the corrugated material, the conveyor path extending substantially perpendicular to the plurality of channels defined by the corrugations in the corrugated material, and severing the walls of

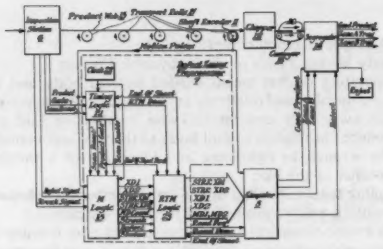


the channels whilst the corrugated material is held by the guide members.

4,211,132
APPARATUS FOR ON-LINE DEFECT ZONING

Lee H. Nichols, III, and Edmund H. Smith, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 21, 1977, Ser. No. 853,420
Int. Cl.[2] B26D *5/30*
U.S. Cl. 83—71 7 Claims



1. An apparatus for obtaining sheet product from a web running at on-line speeds including inspection means for determining the existence and location of anomalies in said web and generating corresponding anomaly output signals, classifying means responsive to said anomaly output signals for classifying, by generating reject signals, preselected rectangular areas of said web as acceptable or rejectable, means for chopping said web into sheets of said preselected areas, and means responsive to said reject signals for segregating said unacceptable sheets from said acceptable sheets, the improvement wherein:

said classifying means including logic means responsive to said anomaly output signals for generating region signals defining a closed region containing all of said anomalies in each said preselected area, and

computer means for comparing said region signals with reference signals defining acceptable product to classify said preselected areas as acceptable or rejectable for optimizing the yield of sheet product.

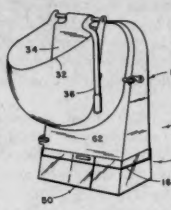
4,211,133
SLICER OUTLET EXTENDER

William J. Muth, 6342 Charles St., Omaha, Nebr. 68132

Filed Feb. 15, 1979, Ser. No. 12,324
Int. Cl.[2] B26D *7/06*
U.S. Cl. 83—162 6 Claims

1. A slicer outlet extender and slicing assembly comprising a slicing machine having an outlet housing provided with an outer side which is larger in a lower portion than above said lower portion as seen in a horizontal plane, and an outlet extender, said extender having a body portion which is an elongated piece of material wrapped horizontally around the outside of the lower end of said outlet housing and said body portion

having end portions which lap each other as seen in top plan view, and connecting means comprising two elements respec-



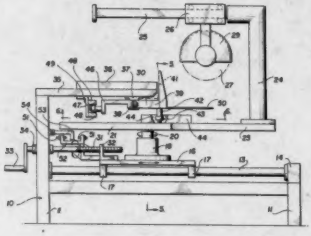
tively disposed on and secured to the respective lapping ends of said body portion, said two elements being secured together for interconnecting said lapping ends of said body portion.

4,211,134

SELF-ALIGNING FENCE FOR RADIAL ARM SAW

Roland H. Thorsell, and Stoddard H. Pyle, both of Corvallis, Oreg., assignors to Excor, Inc., Corvallis, Oreg.

Filed Mar. 26, 1979, Ser. No. 24,174
Int. Cl.³ B27B *5/20*; B23D *47/02*
U.S. Cl. 83—471.3 **12 Claims**



1. In a radial arm saw, a supporting base, a carriage means on the base and being adjustable along a linear path relative to the supporting base, an upright axis turntable structure on the carriage means and bodily movable therewith and including a radial arm saw, a second carriage means on the supporting base is superposed relation to the first-named carriage means and turntable structure and being movable in a linear path across the path of movement of the first-named carriage means, a work-engaging fence fixed to the second carriage means and movable therewith along the second-named linear path, and coacting means on the turntable structure and second-named carriage means to drive the second-named carriage means and said fence along the second-named linear path in response to rotation of the turntable structure around said upright axis, the movement of the second-named carriage means and fence being proportional to the spacing between said upright axis and a plane in which the working face of said fence lies.

4,211,135

CUTTING WIDTH MODIFYING MEANS FOR A LONGITUDINAL WEB CUTTING MACHINE

Friedrich Wehde, Bomlitz, Fed. Rep. of Germany, assignor to Firma Erwin Kampf GmbH & Co. Maschinenfabrik, Wiehl, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,469
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741908
Int. Cl.² B23D *19/04*
U.S. Cl. 83—499 **4 Claims**

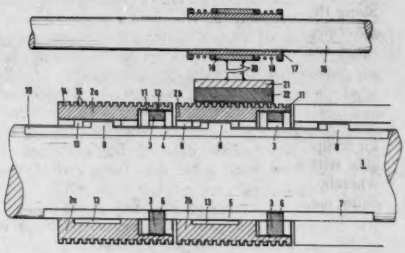
1. Apparatus for adjustably controlling the width of cut of a web of material, comprising

(a) a bottom blade shaft having at least one longitudinal groove formed in the surface thereof,

(b) a plurality of bottom blade sleeves positioned around said shaft, each sleeve containing an internally threaded part, an annular recess, and a plurality of arcuately spaced longitudinal grooves,

(c) an externally threaded ring threadedly connected to said internally threaded part of each of said sleeves, and means for releasably but non-rotatably mounting said ring on said shaft,

(d) a key retainer mounted for axial movement in said longitudinal groove in said shaft, said key retainer being formed with at least one cam surface adapted to engage one of said longitudinal grooves formed in one of said sleeves,



(e) retaining means for permitting relative rotation between said plurality of sleeves, said retaining means including means for frictionally pressing against the associated sleeve for preventing rotary movement thereof relative to said shaft prior to adjustment of the width of cut,

(f) drive means for driving said shaft while said retaining means is frictionally pressing against said associated sleeve whereby said associated sleeve is adjusted axially relative to said shaft by virtue of engagement of its internally threaded part with said threaded ring, and

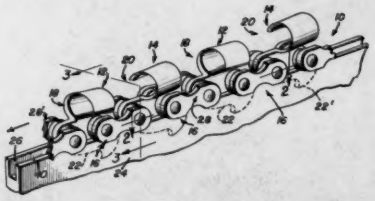
(g) control means operatively connected to said key retainer and axially displaceable on said shaft for axially moving said key retainer for retaining said associated sleeve in its adjusted position.

4,211,136

CUTTER ASSEMBLY FOR SAW CHAIN

Grady O. Geurian, 1305 N. Front, Dardanelle, Ark. 72834

Filed May 8, 1978, Ser. No. 903,545
Int. Cl.² B27B *33/14*
U.S. Cl. 83—830 **4 Claims**



1. A cutter assembly for a saw chain for making a cut to a predetermined given depth, comprising, in combination:

(a) a first cutter member;

(b) a second cutter member arranged sequentially with respect to the first cutter member; and

(c) attachment means attached to the first cutter member and the second cutter member for connecting together the first cutter member and second cutter member in sequential disposition, wherein the first cutter member and the second cutter member each include a cutter and a driver,

with the latter being receivable in a peripheral groove of a cutter bar, and the cutter of the first cutter member extending away from the cutter of the second cutter member along an extent of the sequential disposition of the first cutter member and the second cutter member for forming an alternate bite for the cutter assembly, wherein the cutter of the first cutter member is a right-hand circular-edged cutter and the cutter of the second cutter member is a left-hand circular-edged cutter, respectively, looking along the assembly in an intended forward direction of movement of a chain in which the assembly is incorporated, wherein both the first and second cutter members are required to make a cut to the given depth, the right-hand cutter being adapted for making approximately one-half the depth, and the left-hand cutter being adapted for completing the cut, the cutter members being sharpenable with a round file or a round power-driven hone, wherein each of the first cutter member and the second cutter member is provided with a pair of openings, and the attachment means includes, in combination:

(1) a pair of opposed, spaced, substantially parallel, coextensive, longitudinally extending links, with the first cutter member and the second cutter member being disposed partly between the links and extending in opposite directions therefrom, each of the links being provided with a pair of longitudinally spaced apertures; and

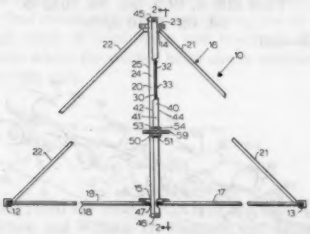
(2) a pair of pins arranged in opposed ones of the apertures and in one of the openings of an associated one of the first cutter member and the second cutter member for pivotally attaching the cutter member to the links and tying the links to one another, wherein the attachment means further includes a plurality of rollers mounted in pairs on each of the pins between an associated one of the links and a respective one of the first cutter member and the second cutter member and arranged for engagement with an associated cutter bar for providing rolling friction between the cutter assembly and the cutter bar, each pair of rollers riding on parallel ridges of the grooved cutter bar.

4,211,137

APPARATUS FOR CUTTING STIFF SHEET MATERIAL

Donald C. Pierce, 1253 C Redwood Blvd., Novato, Calif. 94947

Filed Jan. 29, 1979, Ser. No. 7,007
Int. Cl.[2] B26D *3/08, 1/20*
U.S. Cl. 83—864 **23 Claims**



1. A device for cutting stiff sheet material, including in combination:

a straightedge barrier for alignment of said sheet material,

a back support for said sheet material, said back support including a first bar perpendicular to said straight-edge barrier,

a strip blade secured along one edge of said first bar perpendicular to said straightedge barrier and having a shearing face with an acute-angle cutting edge projecting beyond said first bar,

a second bar spaced from and parallel to said first bar, and

a carriage mounted on said second bar in low-friction rolling engagement with said second bar, for movement therealong,

said carriage having mounted thereon a series of rotatably supported shearing rollers opposite said cutting edge of said blade and to one side thereof, said rollers comprising a first roller, at least one intermediate roller and a last roller, all said rollers being substantially coplanar, all said rollers being identical and having a vertical shear face and a sharp edge,

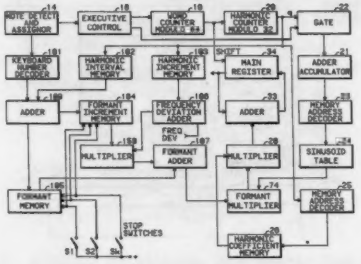
the axes of said rollers being successively closer to said cutting edge of said blade, so that during movement of the carriage, the first roller urges the sheet material against said cutting edge and seizes it there, the succeeding rollers forcing the material into progressive shearing action against said cutting edge and said shearing face, said rollers never passing beyond said cutting edge except for said last roller which extends beyond said cutting edge.

4,211,138

HARMONIC FORMANT FILTER FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Japan

Filed Jun. 22, 1978, Ser. No. 917,920
Int. Cl.[2] G10H *1/06*
U.S. Cl. 84—1.01 **6 Claims**



1. A tone generator having a fixed formant filter characteristic for generating a tone having a pitch selected by operating a key on a keyboard comprising a harmonic counter for counting the harmonic components of the tone being generated, means initiating a plurality of harmonic component calculation cycles, said means advancing the harmonic counter at the start of each calculation cycle, means storing a plurality of harmonic coefficient values, means reading out a different coefficient value from the storing means with each advance of the harmonic counter, means storing a plurality of sinusoid values, means reading out a sequence of sinusoid values with each setting of the harmonic counter, adder-accumulator means, means multiplying the coefficient value for each harmonic calculation cycle with a sequence of sinusoid values and adding the product values to the adder-accumulator, addressable means storing a plurality of scale factors corresponding to the relative amplitude values of the fixed formant filter characteristic at predetermined frequencies corresponding to the musical notes of the keyboard, means for addressing the addressable storage means in response to the selected key on the keyboard and the state of the harmonic counter, means multiplying each of said product values added to the adder-accumulator by the associated scale factor read out of the storage means, and means converting each of the values stored in the adder-accumulator at the completion of said calculation cycles to an analog voltage in sequence at a rate determined by the pitch of the tone being generated, whereby the set of values stored in the adder-accumulator is converted to an audio voltage signal having a fundamental frequency corresponding to the desired pitch of tone being generated, means for modifying the scale factor read out of the addressable scale factor storing means

including means for generating the incremental difference between successive scale factors read out of the scale factor storing means, means generating a frequency deviation value, means multiplying said incremental difference by said deviation value, and means adding the content of the multiplying means to the scale factor from the scale factor storing means.

5. A polyphonic digital tone synthesizer, comprising: a keyboard having keys for initiating one or more musical notes, a main register for storing a set of coded values corresponding to the relative amplitudes of a set of points defining one cycle of a periodic musical waveform, a digital-to-analog converter, means responsive to operation of a selected key for transferring the coded values in sequence from the main register to the converter at a rate proportional to the pitch of the note initiated by the selected key, means for computing the set of coded values and storing them in the main register including means storing a set of harmonic coefficients, means storing a set of orthogonal function values, means multiplying each harmonic coefficient in succession with a set of orthogonal values to produce a succession of computed sets of values defining respectively each harmonic of the desired waveform, and means for adding the successive sets of values and accumulating the sums in the main register, addressable storage means storing at least one set of scale factors defining the gain characteristic of the fixed formant filter over the audio frequency range, means generating addresses for addressing the addressable storage means including means generating a unique address for each key on the keyboard and means adding a unique incremental value to said address for each harmonic being computed, and means applying the scale factor addressed in said addressable storage means to said scaler means to apply a different scale factor for each computed set of values defining each harmonic of the desired waveform, said means applying the scale factor including means for adjusting the scale factor read out of the addressable storage means, said adjusting means including means for providing the incremental difference between the scale factor read out of the storage means and the scale factor at the next successive address of the storage means, means for multiplying said incremental difference by a frequency deviation signal, and means for adding the output of the multiplying means to the scale factor read out of the storage means.

4,211,139

PICKUP MECHANISM

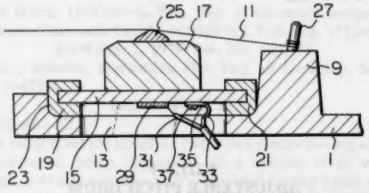
Kazuo Murakami, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 18, 1978, Ser. No. 897,405

Claims priority, application Japan, Apr. 20, 1977, 52-48873; Apr. 21, 1977, 52-45123; Apr. 21, 1977, 52-49578; Jun. 24, 1977, 52-83714; Jun. 24, 1977, 52-83716; Jun. 24, 1977, 52-83717

Int. Cl.[2] G10H *3/00*

U.S. Cl. 84—1.14 **16 Claims**



1. An improved pickup mechanism for electric pianos comprising a bridge for engaging a string,

a piano plate having a front face and being provided with an opening formed at a position corresponding to said bridge,

a vibration transmitter plate having a front face and an opposite back face and the vibration transmitter plate covering the front of said opening and carrying said bridge on said front face of said vibration transmitter plate,

a vibration absorbing means arranged on said front face of said piano plate on two sides of said opening and carrying said transmitter plate on said piano plate,

a pickup unit disposed on said back face of said transmitter plate, and

lead wires for electrically coupling electrodes of said pickup unit to an electric circuit.

7. An improved pickup mechanism for electric pianos comprising a bridge,

a piano plate having a front face and being provided with at least a through opening formed at a position corresponding to said bridge,

a vibration transmitter plate having a front face and a back face and covering the front of said opening and carrying said bridge on said front face of said vibration transmitter plate,

vibration absorbing means arranged on said front face of said piano plate on two sides of said opening and carrying said transmitter plate on said piano plate,

a pickup unit arranged in pressure contact with said back face of said vibration transmitter plate,

means for elastically urging said pickup unit into said pressure contact with said back face of said transmitter plate, and

lead wires for electrically coupling said pickup unit to an electric circuit.

4,211,140

Patent Not Issued For This Number

4,211,141

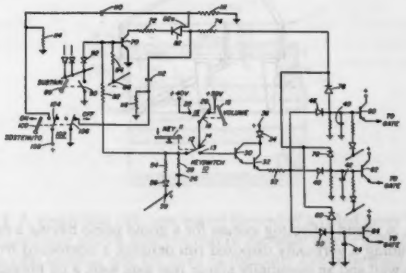
PEDAL CONTROL CIRCUITS FOR ELECTRONIC PIANO

Richard W. Jensen, 583 Fay Ave., Elmhurst, Ill. 60126, and Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill. 60464

Continuation of Ser. No. 887,696, Mar. 17, 1978, abandoned, which is a division of Ser. No. 753,144, Dec. 21, 1976, Pat. No. 4,129,056. This application Apr. 9, 1979, Ser. No. 28,615

Int. Cl.[2] G10H *1/02, 5/00*

U.S. Cl. 84—1.27 **9 Claims**



1. In an electronic musical instrument, the combination comprising:

a plurality of playing keys each adapted to be operated between a normal position and an operated position,

a single pole-double throw key switch operatively associated with each playing key with its movable contactor arranged to engage a first contact when said playing key is in the normal position to engage a second contact when said playing key is in its operated position,

first circuit means including a first capacitor associated with each of said playing keys for producing a tone signal having a peak amplitude determined by the level of a voltage appearing across said first capacitor,

pulse generating means associated with each of said playing keys including a second capacitor connected to the movable contactor of the associated keyswitch operative in response to movement of a playing key from its normal position to its operated position for generating a voltage pulse having a peak amplitude determined by the magnitude of a voltage applied to said second capacitor,

means for coupling a voltage pulse from said pulse generating means to said first capacitor for rapidly charging said first capacitor to a level determined by the amplitude of said voltage pulse,

player-operated volume control pedal means adapted to be moved from a first position to at least one other position, and

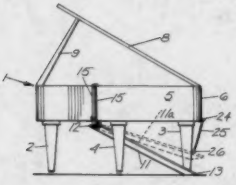
second circuit means connected to the first contact of said key switch and operatively associated with said control pedal means for applying to said second capacitor a voltage having a first predetermined amplitude when said control pedal means is at said first position and for applying to said second capacitor a second different predetermined voltage when said pedal control means is at said at least one other position.

4,211,142

SOUND REFLECTOR FOR GRAND PIANOS

Harold A. Conklin, Jr., Cincinnati, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Dec. 29, 1978, Ser. No. 974,217
Int. Cl.[2] G10C *3/06*
U.S. Cl. 89—189 **14 Claims**



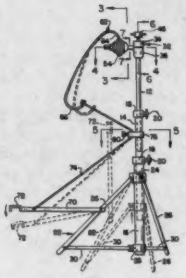
1. A sound reflecting system for a grand piano having a case including a vertically disposed rim defining a contoured front side wall and an essentially planar rear side wall, a lid hingedly connected to the rear side wall of the rim, and a horizontally disposed soundboard mounted within said rim, said lid being elevated so as to lie at an inclined angle with respect to said case, a sound reflector underlying the case of the piano, said sound reflector comprising a panel of sound reflecting material of a size to underlie the soundboard, said reflective panel lying at an inclined angle with its uppermost side edge adjacent the undersurface of the front side wall of the rim and with its lowermost side edge underlying the rear side wall of the rim at floor level, and means for mounting the reflective panel beneath the piano case , said elevated lid reflecting sound forwardly from the top of the case and said sound reflector reflecting sound rearwardly from the bottom of the case, whereby to enhance the distribution in all directions of sound radiated by the soundboard.

4,211,143

MUSICAL INSTRUMENT

Robert J. Cote, 9692 E. Outer Dr., Detroit, Mich. 48213

Filed Apr. 16, 1979, Ser. No. 30,105
Int. Cl.[3] G10D *13/08*
U.S. Cl. 84—402 **8 Claims**



1. A musical instrument comprising an elongated member, a base on one end of the elongated member holding it in an upright position, a flat flexible member, connecting means attaching the flat flexible member to the upper end of the elongated member, an operator lever pivotally connected to the base, and an elongated flexible member connecting the operator lever to the flat flexible member so that the latter said member can be selectively flexed to produce different tones when it is struck.

4,211,144

ADJUSTABLE PITCH DRUM

Randall L. May, 8312 Seaport Dr., Huntington Beach, Calif. 92646

Filed Dec. 21, 1978, Ser. No. 971,857
Int. Cl.[2] G10D *13/02*
U.S. Cl. 84—411 A **1 Claim**

1. An adjustable pitch drum assembly comprising,
an imperforate hollow drum shell having an open end,

an exteriorly threaded annular ring member supported on the exterior of said drum shell,

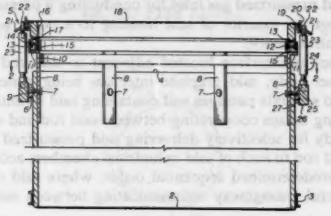
a second annular ring member, interiorly threaded and threadedly supported on said first named ring member,

a plurality of rod members, supported in substantially parallel relation with their lower ends equally spaced and supported in said second ring member,

a drum head assembly comprising a supporting hoop and a clamping hoop and a drum head secured therebetween in normally stretched relation,

said clamping hoop being supported on the upper ends of said rod members in spaced relation to the open end of said drum shell,

a plurality of supporting members equally spaced around the open end of said drum shell and supported on the inside of



said shell and extending outwardly therefrom in parallel relation to each other and to said supporting rods,

an annular member of channel-shaped cross section supported on the upper ends of said supporting members,

a plurality of equally spaced roller bearing members supported in said channel shaped annular member,

a tensioning hoop of a plastic material of a low coefficient of friction supported on said bearing members and abutting said drum head, and

said second annular member being rotatable around said first named annular member to adjust the position of said clamping hoop and drum head relative to said tensioning hoop to vary the tension of said drum head while maintaining the same in a predetermined spaced relation to the open end of said drum shell.

4,211,145

BLIND RIVET

Gernot Dolch, Heidelberg, Fed. Rep. of Germany, assignor to Mecano-Simmonds GmbH, Heidelberg, Fed. Rep. of Germany

Filed Sep. 2, 1975, Ser. No. 609,775

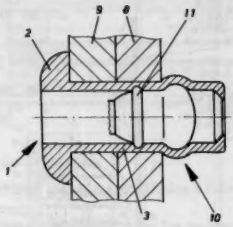
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1974, 2442292

Int. Cl.[2] F16B *13/06*

U.S. Cl. 85—72 **1 Claim**

1. A blind rivet for coupling two work pieces having aligned through-holes, being comprised of a tubular rivet with a through-hole and a set head and a mandrel having a pull shank, a thickened head which forms a snap head at the free end of the tubular rivet when the mandrel is retracted, and the pull shank of the mandrel breaks away at the preset breaking point after the formation of the snap head, one of said work pieces being adjacent the rivet set head and the other said work piece being adjacent said thickened head, the improvement comprising:

said rivet being fabricated out of thermoplastic synthetic material and said mandrel having a conical part spaced from said thickened head, and a cylindrical part between said thickened head and said conical part, said conical part tapering down to a break joint with said pull shank, an integral sealing ring at the juncture of the said conical part and said cylindrical part and located between said break joint and the greatest diameter of the head, the outer diameter of said ring being greater than said conical part and said cylindrical part so that the ring projects radially all along its circumference from the conical part and the



cylindrical part, the diameter of the ring being also larger than the through-hole of the tubular rivet, and the distance between the greatest diameter of the head and the sealing ring is chosen so that the sealing ring is disposed inside the through-hole of said other work piece when the rivet is set, said break joint being inside the through-hole of the rivet when it is broken whereby to have no part of the draw shank extending from the rivet after the rivet is set and the draw shank broken off.

4,211,146

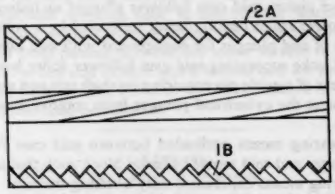
RIFLE GUN BARREL

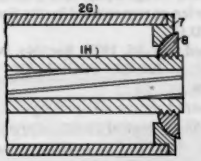
Richard L. Bradley, 6602 Bowie Dr., Springfield, Va. 22150

Filed Dec. 28, 1977, Ser. No. 865,226

Int. Cl.[2] F41F *17/08*

U.S. Cl. 89—16 **5 Claims**



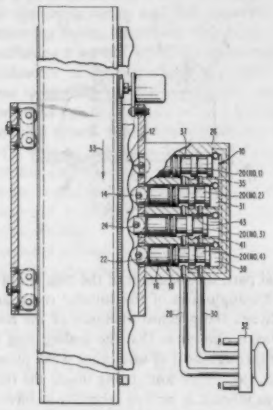


1. A composite rifle gun barrel formed of a rifled inner tube and an outer sleeve, with the rear of the outer sleeve bearing on the rifle receiver and the front of the outer sleeve bearing on a bushing and a spherical nut threaded to the muzzle of the inner tube, so that the outer sleeve is in compression and the inner tube is in tension.

4,211,147
SERVO-CONTROL VALVE FOR A LINEAR HYDRAULIC MOTOR

Hugo A. Panissidi, Peekskill; Glenmore L. Shelton, Jr., Carmel, both of N.Y., and Peter M. Will, Norwalk, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,760
Int. Cl.[2] F15B *13/02*
U.S. Cl. 91—184 **4 Claims**



1. A servo-control valve for a linear hydraulic motor that drives a linear cam, comprising:

a hydraulically actuated control valve piston contained in a motor cylinder block, each said control valve piston having a groove which is in fluid communication with a source of fluid pressure for driving said piston;

a cylindrical cam follower plunger interposed in axial alignment between said valve piston and a linear cam, said cam follower plunger not being attached to said valve piston but being maintained in linear contact with said valve piston by means of hydraulic back pressure on the control valve piston, said cam follower plunger including a cam follower roller bearing being supported by a yoke at one end of said plunger for engagement with said linear cam, said yoke supporting said cam follower roller bearing by means of a guide pin providing its shaft axis and serving to prevent the cylindrical plunger from rotative movement; and

ball bearing means preloaded between said cam follower plunger and said motor cylinder block such that said ball bearing means experience only a rolling friction.

4,211,148
HOT GAS MOTOR

Raymond E. Boss, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1978, Ser. No. 945,951
Int. Cl.[2] F01B *13/04*
U.S. Cl. 91—499 **6 Claims**

1. A gas powered motor comprising:

a housing having a central cavity, a pressurized gas inlet, an exhaust gas outlet and an outlet aperture;

an inner body mounted within said central cavity for rotation about a first axis relative to said housing, said inner body having two ends, an output shaft on one end extending along said first axis through said output aperture, and a plurality of open cylindrical chambers on the other end, said cylindrical chambers being arranged in a circular pattern centered around and aligned parallel with said first axis, and each of said cylindrical chambers being evenly spaced from adjacent cylindrical chambers;

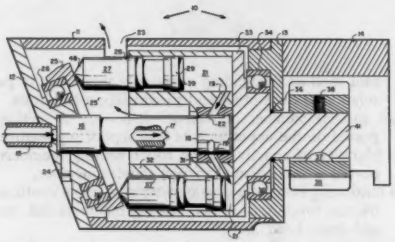
a plurality of pistons, each having a conical end and a flat end, and each piston being sealingly slidable between first and second positions within one of said cylindrical chambers, said conical ends on said pistons extending respectively from each of said cylindrical chambers;

a pivot plate mounted within said housing central cavity for rotation about a second axis, said pivot plate having a flat annular contact surface which is perpendicular to and centered around said second axis and in confronting opposed relationship with the conical ends of said pistons, wherein said second axis intersects said first axis at a point;

a rod having first and second ends and a central passageway which is open on said first end, said rod being aligned with said first axis, said first end being adjacent said pressurized inlet, and said second end being adjacent said inner body, said rod attached to said housing and cooperating with said pressurized gas inlet for conducting a pressurized gas from the exterior of said housing to a point within said central cavity;

a graphite interface located adjacent to said rod and said inner body, said graphite interface being penetrated by said separate passages and containing said terminal points;

valving means cooperating between said rod and said inner body for selectively delivering said pressurized gas from said rod to each of said cylindrical chambers according to a predetermined sequential order, where said rod has a lateral passageway communicating between said central



passageway and a point on the surface of said rod adjacent said inner body, and said inner body has a plurality of separate passages, each communicating between a different one of said cylindrical chambers and a different terminal point on the surface of said inner body adjacent said rod wherein said terminal points are spaced from one another and located momentarily adjacent each of said lateral passageways as said inner body rotates relative to said housing, whereby said lateral passageway aligns and communicates with each of said separate passages according to a foresaid predetermined sequential order; and

venting means cooperating among said rod, said inner body and said exhaust gas outlet for exhausting gas from said cylindrical chambers to the exterior of said housing according to said predetermined sequential order, said rod has a relieved portion spaced from said lateral passageway and aligned with each of said inner body passage terminal points according to aforesaid predetermined sequential order as said inner body rotates relative to said housing, whereby exhaust of gas within said cylindrical chambers to said central cavity and out through said exhaust gas outlet is enabled; and

whereby pressurized gas within said rod is selectively distributed to each cylindrical chamber, in order, driving the conical end of each respective piston into contact with said pivot plate flat annular contact surface, resulting in uncountered reaction forces which cause rotation of said inner body and pivot plate around said first and second axes respectively, thereby enabling stroking of said pistons

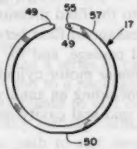
from said first position to said second position, said pivot plate returning said pistons from said second position to said first position thereby exhausting gas from said cylindrical chambers.

4,211,149

SPLIT LOCK RING FOR LOCKING ACTUATOR AND METHOD FOR MANUFACTURING THE SAME

Louis C. Hrusch, Chesterland, Ohio, assignor to Pneumo Corporation, Boston, Mass.

Filed Oct. 13, 1977, Ser. No. 841,936
Int. Cl.² F15B *15/26*
U.S. Cl. 92—27 **4 Claims**



1. A lock ring assembly for a piston cylinder actuator comprising a split lock ring having ends of reduced thickness formed by inwardly tapering the radially outer surface and outwardly tapering the radially inner surface uniformly to distribute the bending loads therealong and a flat on the outer diameter thereof diametrically opposite the reduced thickness ends to provide load carrying symmetry, means radially to expand and contract said lock ring selectively to lock the piston to the cylinder to fix their relative axial positions or to unlock the piston from the cylinder to permit relative axial movement therebetween with peripheral sliding contact between one axial surface of the lock ring and one diametrical surface of the piston or cylinder, such sliding surface of the lock ring by being lapped in its sliding configuration has a uniform periphery conforming to the cylinder or piston diametrical surface about substantially its entire periphery during the sliding movement.

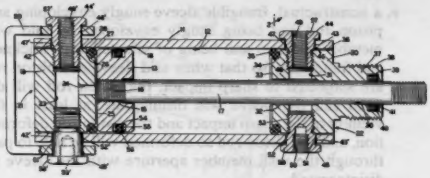
4. A method for assembling a split lock ring selectively to lock and unlock a piston and cylinder actuator by radial expansion and contraction comprising the steps of selecting a generally smoothly contoured, initially flat split lock ring having sufficient diameter to cross sectional configuration reliably to undergo the necessary radial movements, tapering the inner and outer surfaces of the ring to form reduced thickness ends, bending the split lock ring into a generally circular configuration having a diameter intermediate the diameters describing the minimum and maximum radial extremes for the split locking ring, forming a flat on one lock ring surface diametrically opposite the tapered ends by removing a volume of material generally equal to the material removed for the reduced thickness ends, holding the split lock ring body in the configuration corresponding to its unlocked condition, lapping one diametrical surface of the split lock ring when thus held, and assembling the thus lapped split lock ring on means radially to expand and contract the same in the piston and cylinder actuator so that the lapped surface will be received in one of the piston or cylinder parts while locked and will be in substantially uniform peripheral sliding contact with said one part while unlocked.

4,211,150

AIR CYLINDER

Norman S. Framberg, Glenview, Ill., assignor to Abex Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 845,836, Oct. 26, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 937,161
Int. Cl.² F01B *15/04*; F16J *15/18*
U.S. Cl. 92—119 **8 Claims**



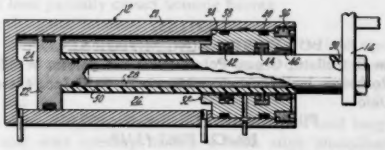
1. A fluid operated cylinder comprising a tube having a blind end and a rod end;
a piston disposed within said tube for reciprocal movement therein;
a rod attached to and movable with the piston;
a blind end closure disposed in the blind end of said tube to close the blind end;
a rod end closure disposed in the rod end of said tube, an axial bearing bore in said rod end closure to receive said rod therethrough for reciprocation relative thereto, the diameter of said rod end closure being less than an inside diameter of the tube to allow slight movement of the rod end closure relative to the tube, wherein said rod end closure can move to align said bearing bore with said rod when the rod is axially misaligned with the tube to prevent binding between said rod and said bearing bore and between said piston and said tube, radial bores formed in the tube adjacent the rod end of the cylinder, a porting bore formed in said rod end closure, said porting bore being aligned with said radial tube bores, a pair of plugs inserted through said tube bores to engage opposite ends of said porting bore to thereby secure said rod end closure within said tube, a fluid passageway formed in one of said plugs, said one plug being adapted to receive a working fluid line to provide working fluid to and receive working fluid from the rod end of the cylinder, a first seal for preventing fluid from passing between the inside surface of the tube and the rod end closure and a second seal for preventing fluid from passing between the inside surface of the tube and the head end closure.

4,211,151

JAM PROOF PISTON

Karl H. Wallischeck, Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 800,766, May 26, 1977, abandoned. This application Nov. 14, 1978, Ser. No. 960,521
Int. Cl.² F01B *1/00*
U.S. Cl. 92—146 **7 Claims**



1. A control including:
(1) a cylinder-piston assembly comprising:
a. a cylinder having a bore portion,
b. a piston positioned in said cylinder bore for reciproca-

tion therewithin and defining a pressure chamber on at least one side thereof within said bore,

c. a piston rod extending from said piston longitudinally along said bore and terminating at a station external thereof,

d. a fixed wall member supported from said cylinder and having an aperture enveloping said piston rod and constituting the structural end wall of said pressure chamber,

e. a nonstructual, frangible sleeve snugly enveloping said piston rod and being snugly enveloped by said wall member aperture and being of selected wall thickness and frangibility so that when said sleeve and piston rod are subjected to sharp impact, the piston rod will deform and the sleeve will disintegrate, at least in the vicinity of the sharp impact and the piston rod deformation, and the piston rod so deformed will be able to pass through the wall member aperture with the sleeve so disintegrated,

(2) a fluid pressure source connected to said pressure chamber to cause said piston to move within said cylinder during normal operation, and

(3) a fluid actuator means operatively connected to said cylinder-piston assembly to cause said piston to reciprocate within said cylinder when said piston rod is so deformed and said sleeve so disintegrated due to sharp impact.

5. A control including:

(1) a cylinder-piston assembly comprising:

a. a cylinder having a bore portion,

b. a piston positioned in said cylinder bore for reciprocation therewithin and defining a pressure chamber on at least one side thereof within said bore,

c. a piston rod extending from said piston longitudinally along said bore and terminating at a station external thereof,

d. a fixed wall member supported from said cylinder and having an aperture enveloping said piston rod and constituting the structural end wall of said pressure chamber,

e. a nonstructural, deformable sleeve snugly enveloping said piston rod and being snugly enveloped by said wall member aperture and being of selected wall thickness and deformability so that when said sleeve and piston rod are subjected to sharp impact, the sleeve will deform and the piston rod so deformed will be able to pass through the wall member aperture with the sleeve so deformed,

(2) a fluid pressure source connected to said pressure chamber to cause said piston to move within said cylinder during normal operation, and

(3) a fluid actuator means operatively connected to said cylinder-piston assembly to cause said piston to reciprocate within said cylinder with said piston rod and said sleeve so deformed due to sharp impact, and

(4) wherein said sleeve is fabricated of soft material so as to deform upon sharp impact and so as to deform upon contact with said wall member aperture in response to the actuating pressure of said actuator means causing said piston to reciprocate to permit said piston rod and hence said piston to continue to reciprocate.

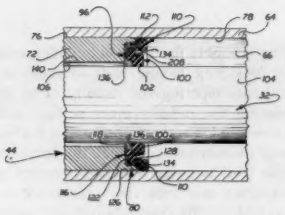
4,211,152

POWER STEERING MOTOR SEAL

John B. Colletti, Grosse Pointe Park, and Forrest W. Howell, Rochester, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 17, 1978, Ser. No. 897,038
Int. Cl.[2] F16J 15/18
U.S. Cl. 92—168 16 Claims

1. A power steering apparatus for use in turning a steerable vehicle wheel, said apparatus comprising a tubular motor cylinder wall partially defining a motor chamber which receives fluid under pressure, a housing, said housing having an end section which is telescopically received in said tubular motor cylinder wall to further define said motor chamber, said end section of said housing having a cylindrical inner surface which at least partially defines a passage extending through said housing, said end section of said housing including an axially extending annular rim section, said rim section having an outer side surface area disposed in engagement with an inner side surface of said tubular motor cylinder wall, said rim section of said housing including a generally radially inwardly facing inner side surface area, said end section of said housing further including an annular end surface, said annular end surface cooperating with said radially inwardly facing inner side surface area to at least partially define a seal cavity, said rim section of said housing further including a circular end surface area interconnecting said inner and outer side surface areas of said rim section, said apparatus further including an axially movable rack bar extending axially through said motor chamber and said passage in said housing, a piston fixedly connected with said rack bar and cooperating with said tubular motor cylinder wall to further define the motor chamber, and seal means for sealingly engaging said rack bar and said tubular motor cylinder wall for preventing exposure of said end section of said housing to the fluid pressure in said motor chamber, for preventing leakage of fluid between said rack bar and housing through said passage, and for preventing leakage of fluid between said tubular motor cylinder wall and said housing, said seal means including an annular body section at least partially disposed in said seal cavity and a flange section ex-

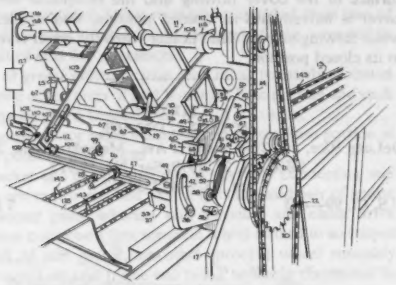


tending generally radially outwardly from said body section and across said end surface area of said rim section of said housing, said body section of said seal means including a circular inner surface area disposed in sealing engagement with said rack bar to prevent fluid leakage from said motor chamber through said passage in said housing, said flange section of said seal means including a circular outer surface area disposed in sealing engagement with the inner side surface of said tubular motor cylinder wall to prevent fluid leakage between said housing and said tubular motor cylinder wall, said seal means including elastomeric material which at least partially defines said body and flange sections of said seal means and a reinforcing member disposed in said elastomeric material, said reinforcing member having an annular main section extending between said body and flange sections of said seal means and a retaining section which extends radially outwardly from said main section and is disposed in said flange section of said seal means, said main section of said reinforcing member being at least partially disposed radially inwardly of said inner side surface area of said housing rim section, said retaining section of said reinforcing member extending across said end surface area of said housing rim section to at least partially support said flange section of said seal means, said reinforcing member further including an annular support section extending axially outwardly from said retaining section in a direction away from said main section and generally parallel to the inner side surface of said tubular motor cylinder wall to support said circular outer surface area of said flange section in sealing engagement with the inner side surface of said tubular motor cylinder wall.

4,211,153
CARTON ERECTING APPARATUS

Robert W. Walters, Caldwell, and James Nylander, Budd Lake, both of N.J., assignors to Container Equipment Corporation, Cedar Grove, N.J.

Filed Aug. 15, 1978, Ser. No. 933,823
Int. Cl.[2] B31B 1/76
U.S. Cl. 93—53 SD 22 Claims



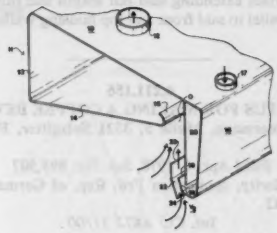
1. A cartoner comprising
a conveyor for conveying a series of carton blanks sequentially from an input end to a packaging station;
a hopper for supplying blanks to said conveyor;
a feeder for sequentially feeding blanks from said hopper through an arcuate path to said input end of said conveyor; said feeder including a rotatable shaft, a support bar extending parallel to and in radially spaced relation to said shaft, at least one set of suction cups mounted on said bar for rotation with said shaft, and means for moving said suction cups radially of said shaft between a rest position and a radially extended position during rotation of said shaft to pick up a carton blank from said hopper, said means including a pair of cams on said shaft at respective ends thereof for rotation therewith, each said cam having at least one arcuate slot and at least one shaped cam slot therein, a pair of discs, each said disc being mounted on a respective cam for relative rotation therewith and being secured to a respective end of said support bar for rotation therewith, a pair of cam followers, each cam follower being secured to a respective end of said support bar and projecting into a respective cam slot of a respective cam, at least one stop pin secured to at least one of said discs and projecting through said arcuate slot of a respective one of said cams for movement in an endless path, and a pawl disposed on a fixed axis in said endless path of said stop pin for engaging said stop pin during rotation of said shaft and said cam to prevent rotation of said discs and said support bar whereby said cam slots direct said cam followers and said support bar radially outwardly of said shaft; and
breaking means disposed in said arcuate path for breaking a carton blank impinging thereon on itself.

4,211,154
APPARATUS FOR IMPROVING THE COLLECTION OF GASES INTO A SUCTION ORIFICE

Marion L. Eakes, 2618 W. Vandalia Rd., Greensboro, N.C. 27407

Filed Sep. 20, 1978, Ser. No. 943,791
Int. Cl.[2] F21C 15/08; F23J 11/00
U.S. Cl. 98—115 LH 2 Claims

1. Apparatus for use with a suction orifice which has a source of negative pressure associated therewith and into which air from an air space is exhausted comprising:
(a) an air having a wall forming an outlet therefor, said nozzle being connected to a source of positive pressure, said air nozzle being spaced from and directed toward said suction orifice for establishing a first venturi to aid in the directing of air from said space into said orifice;
(b) an auxiliary plate extending in substantially parallel, spaced relation to the wall of said air nozzle adjacent the air space affected by the suction orifice;
(c) the edge of said auxiliary plate furthermost from said

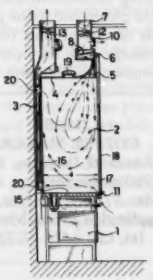


intake orifice being spaced from said intake orifice a distance greater than the corresponding distance between said intake orifice and the outlet of said air nozzle for establishing a second venturi;
(d) whereby the capture point of air from said air space is effectively moved further from said orifice and less contaminated gases are allowed to escape.

4,211,155
LABORATORY HOOD

Kurt Stoll, Steinfurt; Herbert Hinder, Günterod, and Nikolaus Corpus, Schönbach, all of Fed. Rep. of Germany, assignors to Heinrich Prinkmann Anlagenvernachtung, Dreieich, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,921
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758348
Int. Cl.[2] F23J 11/00
U.S. Cl. 98—115 LH 8 Claims



1. A laboratory hood comprising:
an at least partially closed housing having
an elongated interior,
an elongated top housing wall formed with an inlet opening extending generally the full length of said top wall,
an upright back housing wall substantially of said length, and
an openable front wall also substantially of said length, said inlet opening having a front edge immediately adjacent said front side and a back edge spaced backwardly therefrom;
a conduit having
a width generally equal to said length,
an outlet end connected to said inlet opening,

a generally planar front conduit wall terminating at said front edge, and

a forwardly and downwardly convexly curved back conduit wall curving from its upper end generally parallel to said front conduit wall to its bottom end generally parallel to said top housing wall at said back edge; and

means for feeding a gas under superatmospheric pressure to said conduit for introduction of said gas into said interior as a curtain extending said full length and flowing generally parallel to said front and top housing walls at said inlet mouth.

4,211,156

APPARATUS FOR MAKING A COFFEE BEVERAGE

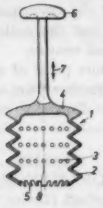
Jürgen Zimmermann, Mulle 5, 3321 Salzgitter, Fed. Rep. of Germany

Filed Apr. 4, 1978, Ser. No. 893,507

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715582

Int. Cl.[2] A47J *31/00*

U.S. Cl. 99—287 **2 Claims**



1. Apparatus for the production of a coffee beverage from dry coffee powder contained in a filter bag comprising a hollow cylindrical housing closed at one end and open at the other end for the receipt of the filter bag, handle means extending from the closed end of said cylinder, and a series of tongues extending generally radially inward along the open end for the retention of said filter bag, the walls of said cylindrical housing being corrugated along circumferential fold lines to form a bellows permitting the closed end to the pumped relative to the open end, said walls having at least one opening therein to thereby provide a passage with the open end for a current of water created by pumping said housing in a body of water.

4,211,157

COFFEE MAKER

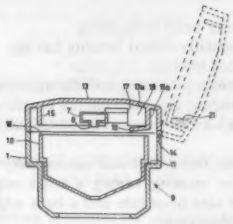
Koichi Sakai, and Kazunori Ikeyama, both of Suita, Japan, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 7, 1978, Ser. No. 884,373

Claims priority, application Japan, Mar. 8, 1977, 52-24341

Int. Cl.[2] A47J *27/52*

U.S. Cl. 99—306 **1 Claim**



1. A coffee maker including a housing having an open top; a cover normally closing the top of the housing and hingedly connected to the housing; a filter holder for ground coffee arranged in the housing underneath the cover; an arcuate flange extending downwardly from the inner surface of the cover in its closed position, said arcuate flange being situated adjacent the hinged side of the cover and above the top edge of the filter holder; and a flange extending radially inwardly and obliquely downwardly from the lower edge of the arcuate flange to form a receptacle; condensation water on the inner surface of the cover flowing into the receptacle when the cover is moved into its opened position, said condensation water flowing into the filter holder when the cover is returned to its closed position.

4,211,158

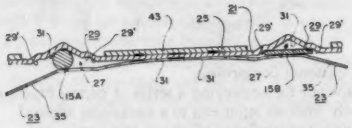
HOLDING DEVICE

DeLong Rice, Jr., 2140 Victoria Ave., Memphis, Tenn. 38116

Filed Jul. 23, 1979, Ser. No. 59,973

Int. Cl.[3] A47J *37/12*

U.S. Cl. 99—403 **7 Claims**



1. A holding device for use with an article of food that is impaled on a stick, said holding device comprising:

(a) body means having a pair of small vee-shaped grooves extending transversely thereacross and a central larger vee-shaped groove extending transversely thereacross; and

(b) spring clamp means having a first portion attached to said body means and having a second portion extending across said grooves for clamping the stick to said body means to hold the article of food from said body means.

4,211,159

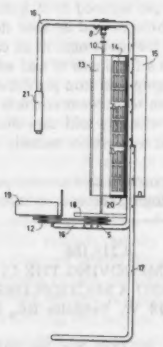
PORTABLE BARBECUE GRILL

Ovidiu Coatu, 1314 W. 111th St., Cleveland, Ohio 44102

Filed Oct. 6, 1977, Ser. No. 840,106

Int. Cl.[2] A47J *37/04*

U.S. Cl. 99—421 V **1 Claim**



3. A portable barbecue grill comprising:

a continuous tube frame formed having a horizontal V-shaped base portion with the arms of the V continuing upwardly as two vertical portions and continuing outwardly to form a V-shaped horizontal top portion with the point of the V extending vertically downward for a distance substantially one-half the height of said barbecue

grill, forming a handle means for grasping and transporting said barbecue grill;

a pair of detachable supporting legs attached to said vertical frame portion, said legs being removable to permit said grill to be supported on a surface by said V-shaped base portion;

a pair of vertically arranged fire containers each having a front grill and mounted on one of said vertical frame portions;

a pair of spits each being rotatably suspended from one of the two arms of said top portion and being arranged in front of said fire containers;

a pair of grease collector pans each being rotatably mounted on one of the arms of said V-shaped base portion and each being disposed beneath one of said two spits;

an electric motor mounted on said V-shaped base portion at the point of the V; and

a sprocket and chain drive means operably connecting said electric motor and said pair of spits and said pair of grease collector pans, wherein said sprocket and chain drive means comprise a first sprocket wheel affixed to an output shaft of said motor, a second sprocket wheel rotatably mounted on said frame and being operably connected to said pair of spits and to said pair of grease collector pans for mutual rotation therewith, and a chain operably connecting said first and second sprocket wheels; whereby said electric motor rotates said spits and said grease collector pans in front of said fire containers.

4,211,160

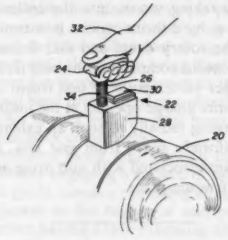
METHOD AND APPARATUS FOR INTERNALLY SEASONING MEAT PRIOR TO COOKING

Dennis W. D. Bieser, Box 144, R.F.D. 2, Iola, Wis. 54945

Filed Jun. 5, 1978, Ser. No. 912,246

Int. Cl.[2] A23B *4/02*; A23L *1/22*

U.S. Cl. 99—494 **12 Claims**



1. In a device for introducing a composition of flowable seasoning internally into meat, the improvement comprising a piercing tube, a rod enclosed by the tube and tapered means fittable against an end of said tube, the rod being joined at one end to the tapered means, and a body portion being attached around said tube, said tube holding a predetermined quantity of said seasoning and being insertable in unison with said tapered means substantially vertically into said meat, said body portion including a reservoir for holding said seasoning and dispensing therefrom said predetermined quantity of seasoning, said tube being retractable from said meat by longitudinal movement of the tube with respect to said rod, the tapered means being adapted for piercing and penetrating the meat free of problems of plugging the piercing tube and excessive pressure required to force the piercing tube into the meat, whereby said seasoning is introduced into the meat from the piercing tube under the influence of gravity without application of pressure on the seasoning.

4,211,161

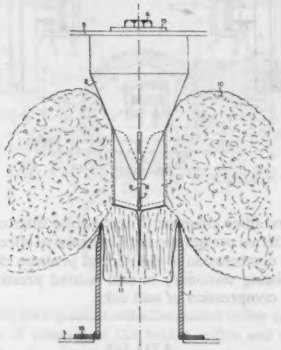
MACHINE TOOLS AND MACHINE FOR REMOVING STEM FROM VEGETABLE, SUCH AS CABBAGE OR CAULIFLOWER

Louis J. Jourdan, 36, rue de Dinan, 35120 Dol de Bretagne, and Jean M. Saillour, Lieu dit "Beauregard", Plouenan, both of France

Filed Mar. 17, 1978, Ser. No. 887,544

Int. Cl.[2] A23N *15/02*; A47J *21/00*

U.S. Cl. 99—638 **12 Claims**



1. A cauliflower stump-removing and floweret-separating tool comprising a lower cylinder having an upper cutting edge, a conical nose piece positioned above the upper cutting edge of said cylinder and having a point with a plurality of downwardly dependent separating blades affixed thereto, the cylinder and the nose piece being coaxially arranged so that the blades and the point of the nose piece are directed along the central axis of the cylinder, means for supporting said nose piece and the cutting edges of the nose piece blades for movement toward and within the cylinder, whereby a cauliflower may be placed on the cylinder with the stump thereof being positioned inside the cylinder with the cutting edge of the cylinder positioned to engage the cauliflower along the circumferential periphery of the stump thereof when the head of the cauliflower is pressed into the cylinder, and means for lowering the nose piece with the nose piece blades moving toward, penetrating, and cutting an initial passageway through, the top of the head and continuing into the stump of the cauliflower so that the conical nose piece follows the initial passageway cut by said blades, whereby said nose piece spreads, separates, and cuts the flowerets of the said top, the blades penetrating into said cylinder with the tapered side of said conical nose piece engaging the cutting edge of the cylinder and thereby detaching the stump which falls through the cylinder while the flowerets of the individual sections scatter around the outside cylinder.

4,211,162

PROCESS FOR THE BATCH FILTERING OF SUSPENSIONS

Wendel Bastgen, Betzdorf, Fed. Rep. of Germany, assignor to Alb. Klein & Co. GmbH KG, Niederfischbach, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,039

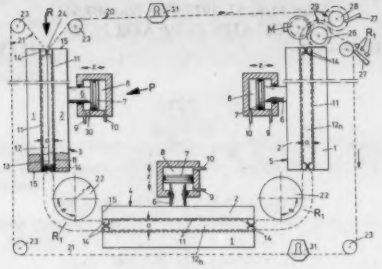
Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720178

Int. Cl.[2] B30B *5/06, 15/30*

U.S. Cl. 100—36 **14 Claims**

1. A method of discontinuously filtering suspensions, comprising advancing a suspension stepwise along a path of travel through discrete separated first and second pressure chambers, applying external pressure to said suspension to effect filtering

of the suspension by compression in said first pressure chamber to form a filter cake, the suspension being stationary in said first pressure chamber during said compression of said suspension, applying shearing forces to the surface of the resulting filter cake to alter its structure in the travel of said filter cake



from the first filter chamber to the second filter chamber and applying external pressure to the filter cake to effect filtering of the cake by compression in said second pressure chamber, said filter cake being stationary in said second pressure chamber during said compression of said cake.

4,211,163

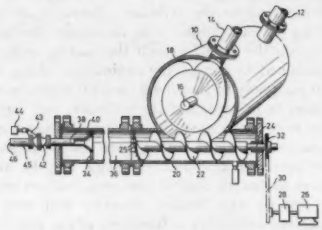
APPARATUS FOR DISCHARGE OF PRESSURE COOKED PARTICULATE OR FIBROUS MATERIAL

Douglas B. Brown, 2104 Prince Charles Rd., Ottawa, Ontario, Canada (K2A 3L3), and Robert Bender, 488 Denbury Ave., Ottawa, Ontario, Canada (K2N 2N7)

Filed Nov. 7, 1978, Ser. No. 958,515

Int. Cl.² B30B *3/00*

U.S. Cl. 100—145 **5 Claims**



1. Apparatus for discharging cooked particulate or fibrous material from a pressurized vessel, which comprises:

a discharge conduit adapted to receive material from the pressurized vessel and being in pressure communication therewith, the discharge conduit having an upstream end, a downstream end and a materials compaction zone adjacent its downstream end;

a feed conveyor in said discharge conduit, adapted to feed material therein towards the downstream end of the discharge conduit and to cause compaction thereof in the compaction zone;

a materials outlet at the downstream end of the discharge conduit, said materials outlet comprising an exit passage of small cross-sectional area as compared with that of the discharge conduit so as to cause compaction of material in the compaction zone by said feed conveyor;

valve means in said exit passage, said valve means being movable rapidly between a fully open position and a fully closed position to permit passage of said material therethrough;

operating means for said valve means adapted to move the valve means rapidly between its fully open and fully closed position, at predetermined intervals, to allow intermittent passage therethrough of cooked materials.

4,211,164

ROTARY DRUM-TYPE COLLECTING VESSEL WITH A RAKING AND PRESSING SCREW

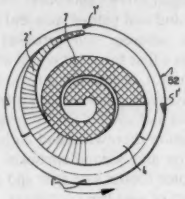
Karl Fichtl, Augsburg; Rudolf Berger, Friedberg; Otto Dürnfelder, Augsburg, and Erich Pilz, Gersthofen, all of Fed. Rep. of Germany, assignors to Industrie-Werke Karlsruhe-Augsburg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,340

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1978, 2802653

Int. Cl.² B30B *3/02*

U.S. Cl. 100—145 **5 Claims**



1. A rotary drum-type collecting vessel for receiving and transporting refuse or other bulk material, comprising, a hollow rotary collecting drum having an inside wall and an end opening, a hollow cover plate covering said opening with a frusto conical interior surface which projects into the collecting drum, said surface terminating in a frustum plane within said drum, and having a lower portion with a charge opening and carrying a spirally extending feed blade on said surface, pushing element means provided on the inside surface of the rotary drum and rotating therewith so as to force the bulk material, as by a raking worm, into the collecting drum and pressed therein, as by a thrust worm, in a zone between said inside wall of the rotary drum and said frustum plane, said pushing element means comprising ribs, said feed blade extending from the upper vertex point of said frusto conical surface up to over the entire charge opening at the inside plane of said surface and enlarging radially to such an extent as to keep its outer border uniformly space from said ribs, and additional compressing means associated with said drum and effective in the zone of said frustum plane.

4,211,165

APPARATUS FOR THE COMPRESSIVE HANDLING OF A STRIP OF MATERIAL

Gottlob Schill, Reutlingen, Fed. Rep. of Germany, assignor to Bruderhaus Maschinen GmbH, Reutlingen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,441

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1977, 2752034

Int. Cl.² D21F *3/08*; D21G *1/02*

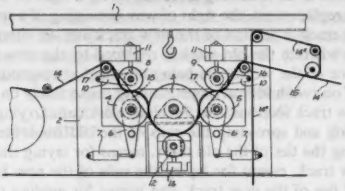
U.S. Cl. 100—162 R **10 Claims**

1. An apparatus for the compressive handling of a strip of material, especially a strip of paper, comprising:

at least five rollers arranged on substantially parallel axes, said rollers being arranged to cooperate with each other in pairs;

means for movably mounting at least one roller of each pair so as to change the size of a compressive zone between two rollers;

said rollers being arranged to form at least two successive steps; and



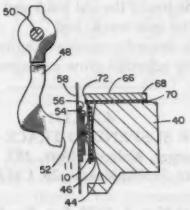
cable means for guiding the strip between rotational axes of each pair of rollers.

4,211,166

PRINT BAND ONE EDGE GUIDE

Thomas T. Hardt, Mount Clemens, Mich., assignor to Computer Peripherals, Inc., Minneapolis, Minn.

Continuation of Ser. No. 799,843, May 23, 1977, abandoned.
This application Sep. 1, 1978, Ser. No. 939,154
Int. Cl.³ B41J *1/20*
U.S. Cl. 101—111 **9 Claims**



1. A guide assembly for maintaining the position of a print band in a band printer, said print band being trained around a drive pulley and an idler pulley and along a print line, said drive pulley and said idler pulley being floatably mounted in said band printer for movement normal to the length of said printing line, said band printer having a plurality of print hammers mounted for impact with the print band along said printing line, said assembly comprising:

a platen positioned along said printing line and having a surface slidably engaging a surface of said print band;

an elongated guide member extending along an edge of said platen adjacent to the region of said printing line, said guide member having a face extending along the region of said printing line and beyond the surface of said platen and the print band slidably engaged thereagainst; and

bias means continually biasing said drive and idler pulleys, and the print band trained thereon, in a direction normal to the length of said printing line and toward said face of said guide member to maintain one edge of said print band in sliding engagement with the face of said guide member to retain said print band in precise position along the printing line during travel therealong.

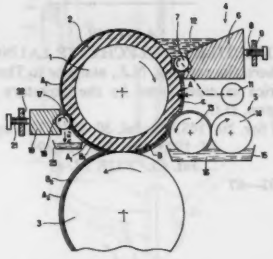
4,211,167

INKING DEVICE FOR PRINTING WITH GREASY INK

Louis G. Corse, Chaumont-sur-Tharonne, France, assignor to Machines Chambon, Orleans, France

Filed Jul. 12, 1978, Ser. No. 923,898
Claims priority, application France, Jul. 22, 1977, 77 22525
Int. Cl.² B41F *7/26, 7/36, 31/06*
U.S. Cl. 101—148 **10 Claims**

1. An inking device for a printing machine using greasy ink, comprising an inking roller with a soft surface layer tangential to a printing cylinder and rotating at the tangential speed of the latter, in the opposite rotational direction, and a small-diameter rod-shaped doctor roller made of hard material extending parallel to the inking roller applied under pressure against the inking roller, a mass of greasy ink being housed in a space lateral upstream, with reference to the direction of rotation of the inking roller, of the zone of contact of the inking roller and printing cylinder, a dampening device engaging and applying a film of dampening liquid, such as water, to the previously inked surface of the inking roller downstream of the zone of



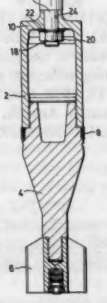
contact of the inking roller with the doctor roller and upstream of the zone of contact of the inking roller and the printing cylinder, wherein said inking device comprises, downstream of the zone of contact of the inking roller and the printing cylinder, a second rod extending parallel to the inking roller, applied under strong pressure against the soft surface layer of the inking roller and forming a barrier solely against the dampening liquid while allowing all the residual film of ink remaining in the periphery of the inking roller to pass and return to the mass of ink in said space.

4,211,168

FIN-STABILIZED PRACTICE MISSILE

Heinz Hiiep, Duesseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 26, 1978, Ser. No. 946,052
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 7732971[U]
Int. Cl.² F42B *13/20*
U.S. Cl. 102—41 **7 Claims**



1. A fin-stabilized unarmed practice missile for impact diagram target shooting, comprising an essentially cylindrical

missile body having a rearwardly tapered rear end, a winged tail unit affixed to the tapered rear end, the body having a front end portion extending normal to the axis thereof, the front end portion having an axially extending opening therein, a forwardly extending pin formed separately from the missile body disposed axially of the missile body, the pin having its rear end received in the opening in the front end portion of the missile body, means securing the pin to the front end portion of the missile body, and a radially outwardly extending annular flange on the pin disposed normal to the axis of the pin and adjacent to the forward end thereof to create pressure equalization about the missile as the missile travels through the air.

4,211,169

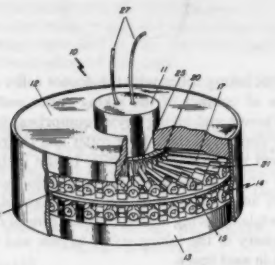
SUB PROJECTILE OR FLECHETTE LAUNCH SYSTEM

Jack Brothers, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 168,504, Jul. 30, 1971. This application Dec. 12, 1973, Ser. No. 421,894

Int. Cl.³ F42B *13/48*

U.S. Cl. 102—67 **6 Claims**



1. An explosive launcher for and including flechettes which comprises:

means for explosively generating a radially directed explosive plane wave including selective initiating means;

a plurality of spaced apart plate members extending radially from and coaxial with said generating means;

each of said flechettes comprising a thin elongated body having a pointed forward end and a plurality of fins at the rear end, and said flechettes being disposed about said plane wave generating means and positioned intermediate adjacent of said plates, said flechettes being oriented in a direction transverse to their intended direction of flight; and

means for supporting said plates and said flechettes.

4,211,170

MOBILE APPARATUS FOR THE CONTINUOUS REPLACEMENT OF AN OLD TRACK BY A NEW TRACK

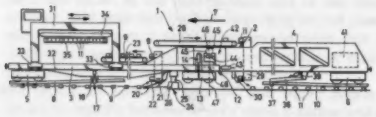
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH, Vienna, Austria

Filed Aug. 18, 1978, Ser. No. 934,997

Claims priority, application Austria, Sep. 2, 1977, 6345/77

Int. Cl.² E01B *27/11*

U.S. Cl. 104—2 **14 Claims**



1. A mobile apparatus for the continuous replacement of an old track by a new track, the track consisting of two rails and ties supporting the rails on ballast, which comprises a train assembly of track-bound freight and work cars arranged for movement in an operating direction along a right of way during the replacement, the right of way consisting of a section of the old track, a section of the new track and an intermediate section wherein the old track is replaced by the new track, a main one of the work cars being mounted at respective ends thereof on two undercarriages running respectively on the old and new track sections, and the main work car carrying means for lifting and spreading the rails of the old track means for receiving the ties of the old track, means for laying the ties of the new track, means for laying the rails of the new track on the laid ties of the new track, and means for guiding the rails substantially without friction along the intermediate section, the improvement of

(a) the main work car comprising a carrier frame supported on the two undercarriages and extending therebetween, the carrier frame being comprised of

(1) two carrier frame parts and

(2) a pivot intermediate the undercarriages linking the two carrier frame parts,

(b) a third undercarriage vertically adjustably mounted on the carrier frame in the range of, and below, the pivot for adjustment between an inoperative, raised position and a lowered position wherein it is capable of traveling on the track,

(c) a vertically adjustable ballast smoothing plow arrangement mounted on the carrier frame between the means for receiving the ties of the old track and the means for laying the ties of the new track, and

(d) a hydraulic drive for vertically adjusting and supporting the vertically adjusted plow arrangement.

4,211,171

STATION FOR SUSPENDED TRACK-TYPE RAILWAY

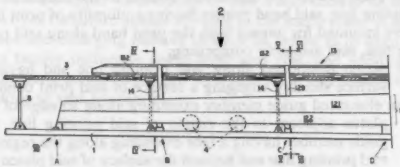
Rudolf Baltensperger, Kaiserstuhlstr. 157, CH-8181 Höri, and Hans B. Pfister, Frohhaldenstr. 20, CH 8180 Bülach, both of Switzerland

Filed Nov. 1, 1978, Ser. No. 956,443

Claims priority, application Switzerland, Nov. 14, 1977, 13832/77

Int. Cl.² E01B *25/24*

U.S. Cl. 104—123 **10 Claims**



1. In a suspended railway having

a substantially fixed tower;

a substantially fixed station;

a suspension cable slung between said tower and said station;

a plurality of horizontally spaced upright hangers depending from said cable;

a horizontally extending track having a suspended section secured in said station; and

a car travelable along said track, said track being vertically deflectable from an upper unloaded position into a lower loaded position as said car travels along it;

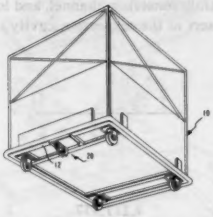
the improvement comprising a substantially rigid guide beam projecting from said station between said track and said cable toward said tower and having a lower guide surface bearing downwardly on said track in said unloaded position therof, whereby as said car approaches said fixed section of said track at said station said suspended section is pulled down from said guide beam.

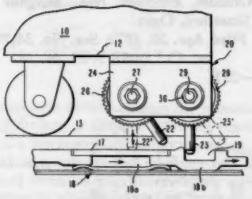
4,211,172

APPARATUS FOR CONNECTING TOW CARTS TO A CONVEYOR

Walter H. Chapman, Beachwood, N.J.; David E. Hiland, Seaford, Del.; Erwin B. Knies, Norristown, Pa., and Robert E. Oberlin, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1978, Ser. No. 892,404
Int. Cl.[2] B61B *13/12*; B65G *17/42*
U.S. Cl. 104—172 BT **4 Claims**





1. In a system for propelling wheeled carts, that includes a moving conveyor and a wheeled cart positioned over said conveyor and adjacent thereto for movement by said conveyor, an apparatus for transmitting force between said conveyor and said cart, said apparatus comprising: a frame attached to said cart between the cart and the conveyor; a pair of hubs mounted to said frame on axes transverse to the movement of the conveyor; means for providing counter rotary movement to one hub with respect to the other; each hub having a pin extending radially from its axis with the pins being slideably mounted to the hubs for radial movement with respect to said axes, one of said pins at a time being placed to act as a force transmitting member between the conveyor and the cart by rotary movement of the other; means for applying a predetermined force to one of said pair of hubs to resist rotary movement of said hubs, said hubs having rotary movement imparted thereto when said cart meets an obstruction overcoming the predetermined force applied to the hubs, said pins moving toward and away from said axes according to the profile of the conveyor when rotary movement is imparted to the hubs.

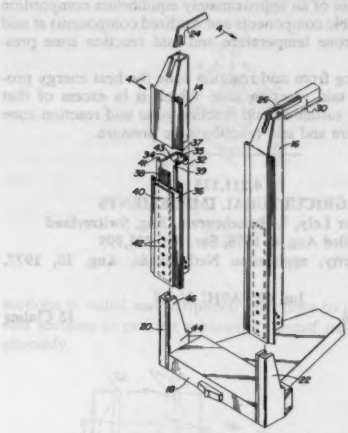
4,211,173

END CONSTRUCTION FOR A RAILWAY CAR

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jan. 16, 1978, Ser. No. 869,759
Int. Cl.[2] B61D *17/06*
U.S. Cl. 105—402 **6 Claims**

6. In a collision post for an end wall structure extending between a roof and a buffer sill of a railway car, a vertically extending rectangular cross-sectioned anchor member for said collision post, said anchor member being secured to said buffer sill and having a lower portion adjacent the buffer sill and an upper portion extending upward from said lower portion, said lower portion and said buffer sill forming an open rectangular box structure, and said upper portion being a tapered channel member consisting of one of the shorter sides of the rectangle and the two adjacent longer sides, said longer sides being



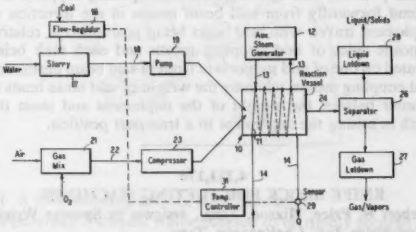
tapered toward said shorter side as they extend upwardly from said box structure.

4,211,174

WET OXIDATION OF COAL FOR GENERATION OF HEAT ENERGY

William J. Martin, Watervliet, Mich., and Kwang-Tzu Yang, South Bend, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 7, 1978, Ser. No. 931,570
Int. Cl.[2] F23D *19/00*
U.S. Cl. 110—263 **35 Claims**



1. A process for oxidizing coal to produce recoverable heat energy without generating gaseous sulfur-containing by-products comprising the steps of simultaneously and continuously:

(A) maintaining a reaction zone at a temperature ranging from about 475° to 650° F. and at a pressure ranging from about 1400 to 3000 psig,

(B) charging to said reaction zone an aqueous slurry containing from about 0.5 to about 50.0 weight percent of coal on a 100 weight percent total slurry basis, said coal being substantially in the form of small particles, at a pressure of from about 1400 to 3000 psig,

(C) charging to said reaction zone a gas containing from about 10 to 100 weight percent of oxygen on a 100 weight percent total gas basis at a pressure ranging from about 1400 to 3000 psig,

(D) admixing said slurry and said gas in said reaction zone,

(E) removing the resulting reactant mixture from said reaction zone,

(F) controlling the respective rates of said slurry charging,

said gas charging, and said removing to produce in said reaction zone a residence time for the components present in said reaction zone which is at least sufficient for generation therein of an approximately equilibrium composition of oxidizable components and oxidized components at said reaction zone temperature and said reaction zone pressure, and

(G) removing from said reaction zone the heat energy produced in said reaction zone which is in excess of that needed to sustain in said reaction zone said reaction zone temperature and said reaction zone pressure.

4,211,175

AGRICULTURAL IMPLEMENTS

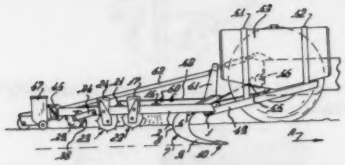
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Aug. 8, 1978, Ser. No. 931,999

Claims priority, application Netherlands, Aug. 15, 1977, 7708956

Int. Cl.[2] A01C *23/02*

U.S. Cl. 111—6 **15 Claims**



1. An agricultural implement comprising a frame having elongated beam means extending transverse to the direction of normal implement travel, forward coupling means on said beam means between the lateral ends thereof and said coupling means being connectable to a three-point lifting hitch of a prime mover, fluid dispensing means on said frame and said dispensing means comprising a pair of fluid tanks means to enable said tanks to assist in movement of said implement to a raised position, said enabling means comprising supports that extend forwardly from said beam means in the direction of implement travel, with said tanks being positioned at relative opposite sides of said coupling means and each tank being located on one of said supports in front of said beam means and said coupling means, whereby the weight of said tanks tends to counter balance the weight of the implement and assist the hitch in raising the implement to a transport position.

4,211,176

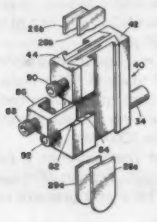
KNIFE BLOCK FOR TUFTING MACHINES

Herbert B. Price, Hixson, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Nov. 15, 1978, Ser. No. 960,734

Int. Cl.[2] D05C *15/00*

U.S. Cl. 112—79 R **6 Claims**



1. A knife block for a tufting machine comprising an elongated body member having a pair of longitudinally extending spaced flange portions, said flange portions being connected together by a longitudinally entending substantially centrally disposed web having a pair of laterally spaced faces, each said face with the adjacent inner faces of the flange defining a cavity on each side of the web, a pair of longitudinally extending inserts each having a configuration adopted to be slidably received in each cavity and having first and second laterally spaced faces, each insert having a first groove formed in the first face adapted to abut said faces of the web, said groove and the face of the web together defining a first knife receiving channel, a second groove formed in each insert substantially parallel to the first groove undercut from the second face to define a second knife receiving channel, and locking means for securing each insert in the respective cavity.

4,211,177

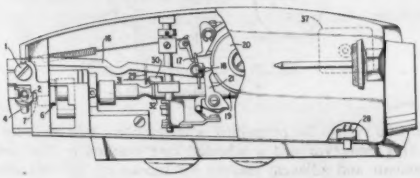
AUTOMATIC SLOW SPEED FOR SKIP STITCH MODE

Thomas G. Graham, Emerson, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 30, 1979, Ser. No. 34,794

Int. Cl.[2] D05B *3/02, 69/18*

U.S. Cl. 112—221 **5 Claims**



1. A sewing machine having a frame, stitch forming instrumentalities including a skip stitch mechanism having a needle bar supported for endwise reciprocation and for lateral jogging movement for the formation of zigzag stitches, pitman means for influencing the lateral jogging movement of said needle bar beyond a predetermined range of laterally jogged positions, and interrupting means for said endwise reciprocation of said needle bar effective only during lateral jogging movement of said needle bar beyond said predetermined range, a drive shaft journalled in said frame for driving said stitch forming instrumentalities, a work feed mechanism actuated in timed relation with said drive shaft, an electric motor supported on said frame for rotatably driving said drive shaft, said motor capable of operating at full rated speed when connected to a source of AC current and operating at a reduced speed when connected to a source of half wave rectified current, a half wave rectifier connected in series with the armature circuit of said electric motor to effect said reduced speed operation of said motor and a first electric switch means connected in parallel with said half wave rectifier for providing a current path around said half wave rectifier when said switch is closed to effect operation of said electric motor at full rated speed, wherein the improvement comprises:

a. sensing means responsive to the lateral position of said needle bar for determining that said lateral jogging movement of said needle bar is beyond said predetermined range, and

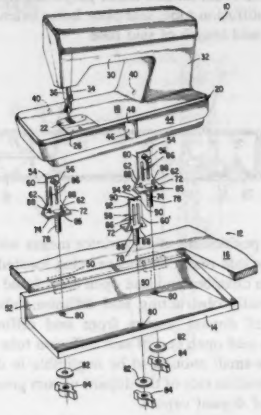
b. override means responsive to said sensing means for overriding the effect of said first electric switch means and effecting said reduced speed operation of said motor when said lateral jogging movement of said needle bar is beyond said predetermined range.

4,211,178

SEWING MACHINE MOUNT

Wesley R. Peterson, Boundbrook, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Feb. 28, 1979, Ser. No. 16,057
Int. Cl.[2] D05B 75/00, 75/02
U.S. Cl. 112—258 21 Claims



1. A sewing machine mount system for mounting to a machine supporting surface or shelf of a sewing machine cabinet, table, or the like, a sewing machine having a pair of hinge pin sockets provided in a side of the machine bed adjacent and specifically spaced from an edge of the work support surface thereof comprising, in combination, a pair of uniform height generally rigid mounting brackets structurally adapted, constructed and arranged to be affixed to the machine bed through cooperation with the hinge pin sockets to depend downwardly thereof to rest on and be also affixed to such machine supporting surface or shelf, together with a flat topped machine rest member structurally adapted, constructed and arranged to be fixedly carried by said machine supporting surface or shelf for extending upwardly thereof to engage a shoulder or flange of such machine bed on a side thereof adjacent an edge of the machine bed work support surface opposite the edge adjacent the pin sockets and sized so as to maintain such work supporting surface of said machine bed parallel such machine supporting surface or shelf with the machine being located automatically thereby with the machine work supporting surface a fixed and specified distance from the machine supporting surface or shelf independent of the depth of the machine bed beneath the pin sockets.

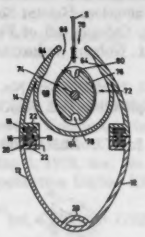
4,211,179

COLUMNAR STRUCTURE

Louie G. Saunders, 3 Turnberry Ave., Bunkers Hill, East London, Cape Province, South Africa

Filed Jun. 12, 1978, Ser. No. 914,687
Claims priority, application South Africa, Jun. 15, 1977, 77/3603; Sep. 12, 1977, 77/5464; Oct. 20, 1977, 77/6268
Int. Cl.[2] B63H 9/10; E04H 12/00
U.S. Cl. 114—90 10 Claims

1. A longitudinally split hollow columnar structure comprising first and second extruded relatively thin-walled sections, having inwardly directed longitudinal edges, the longitudinally extending edges of the first section being juxtaposed to longitudinally extending edges of said second section, each of said sections including a slot extending in the direction of elongation of the section, each slot, in cross-section, having a narrow entrance portion leading to a wider portion and said sections being arranged with said narrow entrance portions of the slots continuous, and a fastening member having a cross-sectional shape compatible with the configuration of the longitudinally extending cavity constituted by said co-operating slots, said fastening member extending in the direction of elongation of said sections and inter-engaging with faces to both



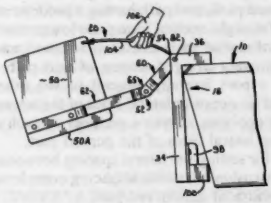
sections in radial and peripheral directions to releasably lock said sections to prevent separation thereof radially and peripherably.

4,211,180

COMPENSATING TROLLING FIN

James C. Brooks, Jr., 2108 S. Kathleen, Jonesboro, Ark. 72401

Filed Jul. 3, 1978, Ser. No. 921,313
Int. Cl.[2] B63H 25/00
U.S. Cl. 114—144 R 2 Claims



1. A drift resisting trolling fin comprising:

a generally J-shaped, frame adapted to be rigidly secured to a boat, said frame including an upper hook portion of predetermined length attachable over a transom and a vertical channel portion extending downwardly from said hook portion and adapted to be positioned adjacent a stern of said boat;

linkage means pivotally secured to said frame and snugly receivable within said channel portion, said linkage means including:

a first linkage section having a length substantially equal to or greater than said frame hook portion; and

a second linkage section pivotally coupled to said first linkage section;

blade means rigidly secured to said second linkage section for selective deployment in either an operable position in water or in an inoperable position substantially within said boat; and

frame slot means defined within said frame channel portion for receiving at least a portion of said blade means when in an operable position for reinforcing said trolling fin against twisting forces.

4,211,181

APPARATUS FOR APPLYING ADHESIVE TO OPPOSED SURFACES OF SHAPED MEMBERS

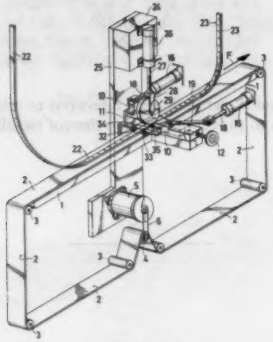
Achim Mueller, Herzogenrath; Hans-Dieter Peetz, Aachen; Peter Scheeren, Wuerselen; Helmut Sistig, Aachen, and Andreas Schallenberg, Cologne, all of Fed. Rep. of Germany, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

Filed Jul. 15, 1977, Ser. No. 816,163

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632337

Int. Cl.[2] B05C *5/02*

U.S. Cl. 118—411 **5 Claims**



1. An apparatus for simultaneously coating opposed lateral faces of a curved part with an adhesive material as the curved part travels along a predetermined curved path lying in a vertical plane, said adhesive material being applied at a lower run portion of the curved path, comprising:

(a) conveying means for advancing the curved part through the curved path, said path having a predetermined approximately straight section along the lower run of the path;

(b) a pair of spaced apart extrusion nozzles located along the approximately straight section of said path, each nozzle having a port laterally aligned to the other and being disposed on opposite lateral sides of the advancing curved part for applying adhesive material to each of the corresponding lateral faces of the curved part;

(c) means for setting the lateral spacing between the portions of the extrusion nozzles to a spacing complementary to the lateral width of the curved part;

(d) pressing means for pressing the curved part independently of the nozzles in a direction perpendicular to a line extending between the extrusion nozzle ports and into firm engagement with said conveying means when disposed along the straight section of said path; and

(e) lateral guiding means for maintaining the curved part in a centered position between said extrusion nozzles independently of the nozzles as the part passes therebetween, said guiding means being located only immediately adjacent the point of application of said adhesive material and being the sole lateral guiding means along said path so as to leave the curved part free of said guiding means along substantially most of the curved path.

4,211,182

DIFFUSION APPARATUS

Wojciech Rosnowski, Summit, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 5, 1978, Ser. No. 903,118

Int. Cl.[2] C23C *13/08*

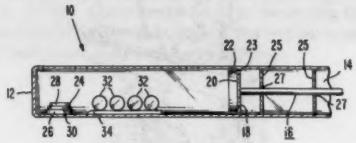
U.S. Cl. 118—725 **6 Claims**

1. A diffusion apparatus comprising:

a hollow diffusion tube having a length, a closed end and an open end, said tube including a diffusion chamber for containing (1) a source of dopant vapors and (2) semiconductor material into which said dopant is to be diffused;

carrier means positioned within said diffusion chamber for

restrictor means positioned within said diffusion tube comprising a plate having substantially the same shape as the cross-section of said hollow portion of said diffusion tube, said cross-section taken perpendicular to the length of said diffusion tube, said plate being oriented perpendicular to said length of said tube



means for positioning said restrictor means within said diffusion tube said restrictor means being located between said diffusion chamber and said open end of said diffusion tube for partially obstructing said diffusion tube to limit the escape of dopant vapors from said diffusion chamber through said open end of said diffusion tube in an amount which is small enough to be negligible in comparison to the generation rate of the dopant vapors generated by said source of dopant vapors.

4,211,183

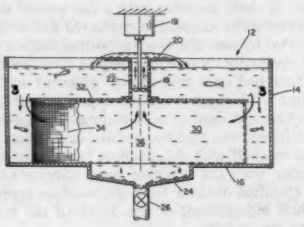
FISH RAISING

David P. Hoult, 39 Norwich Rd., Wellesley, Mass. 02181

Continuation of Ser. No. 822,884, Aug. 8, 1977, abandoned. This application Mar. 2, 1979, Ser. No. 17,070

Int. Cl.[2] A01K *63/00*

U.S. Cl. 119—3 **22 Claims**



14. Apparatus for raising food fish, comprising

a fish tank for maintaining said fish in a volume of water

bacteria-supporting water treating means submerged in said volume of water,

said treating means having

an inlet

an outlet and

a plurality of bacteria-supporting wall means extending between said inlet and outlet providing a plurality of horizontally extended unobstructed passageways having a minimum cross sectional dimension of about one centimeter for free flow of water generally horizontally therethrough in contact with bacteria supported on said wall means, said passageways being vertically unobstructed for gravity removal of sludge therefrom

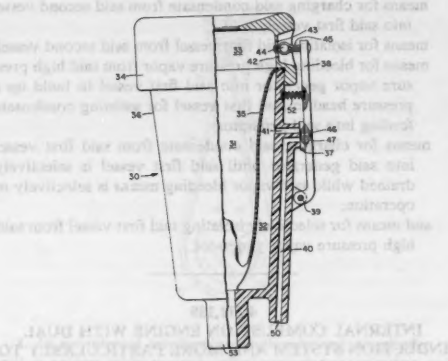
sludge collection means beneath at least a portion of said passageways, and

water recirculation means for recirculating said volume of water through said fish tank and said treating means.

4,211,184
MILKING

John H. Abrahamson, R.D., Cambridge, New Zealand

Filed Mar. 6, 1978, Ser. No. 883,847
Claims priority, application New Zealand, Mar. 28, 1977, 183708
Int. Cl.[2] A01J *5/04*
U.S. Cl. 119—14.02 19 Claims

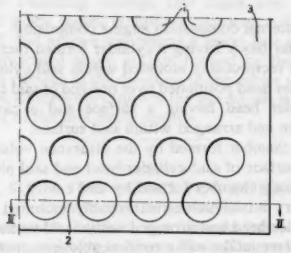


1. A method of milking an animal including applying a teat cup to a teat to be milked; the teat cup having an inflation and a mouth piece; the interior of the inflation being in communication with a milk line connected to a source of vacuum; the exterior of the inflation being in communication with a pulsating vacuum source; characterised in that the level of vacuum within the mouth piece is monitored and is used to control the level of vacuum applied to the exterior of the inflation.

4,211,185
FLOOR MAT FOR STALLS OR CRIBS

Rune Karlsson, Blacksta, POB 5133, Nyköping, Sweden (611 00)

Filed Jun. 23, 1978, Ser. No. 918,518
Claims priority, application Sweden, Jun. 27, 1977, 7707394
Int. Cl.[2] A01K *29/00*
U.S. Cl. 119—28 6 Claims

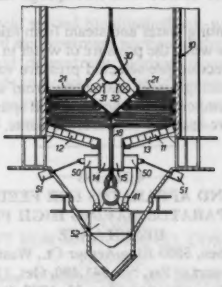


1. A floor mat having top and bottom surfaces, a given area dimension and being made throughout of a compressible material for use in animal stalls, the improvement comprising a plurality of recesses in a predetermined pattern having parallel walls and being located in the bottom surface of the mat and an undivided bottom surface formed of a continuous land of the bottom material having a continuous, lower surface in a plane coincident with the bottom-most level of the mat and extending in all directions surrounding said recesses, said recess parallel walls being substantially vertical and in planes normal to said continuous land, said recesses having a diameter of at least 20 mm, said continuous land between adjacent recesses having a minimum distance of between about 6 to 12 mm, said recesses having a continuous lower edge in a plane coincident with the bottom-most level of the mat, whereby hoofs of animals standing on the mat are distinctly depressed in the mat with the area dimension of the mat being unchanged thereby.

4,211,186
FLUIDIZED BED COMBUSTERS

Arnold P. Pearce, London, England, assignor to Flameless Furnaces Limited, London, England

Filed May 1, 1978, Ser. No. 901,656
Claims priority, application United Kingdom, May 2, 1977, 18354/77
Int. Cl.[2] F22B *1/02*
U.S. Cl. 122—4 D 21 Claims



1. A fluidized bed combustion apparatus comprising in a common structure a plurality of fluidized bed modules arranged side by side in a bank of modules and a plurality of generally vertical walls arranged to separate the bed material of modules in said bank, each such module comprising:

a diffuser bed support arranged to support and fluidize a bed of granular material by means of air diffusion into the bed,

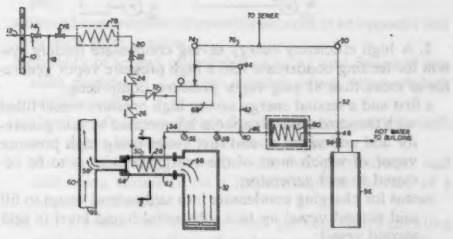
feed means for supplying material to be burnt to a bed supported on the bed support, and

control means for controlling the operation of the bed independently of the operation of the other modules.

4,211,187
ENERGY CONSERVATION SYSTEM FOR HOT WATER HEATERS AND STORAGE TANKS

William C. Farris, 3109 Debera Way, Louisville, Ky. 40220

Filed Apr. 10, 1978, Ser. No. 894,801
Int. Cl.[2] F22B *33/00*
U.S. Cl. 122—20 B 8 Claims



1. In combination with a furnace for heating a building and a water heater, an energy conservation system comprising a first coil of water pipe disposed within a chamber or duct of said furnace for absorbing heat from said furnace to heat water

in said first coil, said pipe being connected between a pressurized source of cold water for said building and a cold water inlet of said heater, said system further comprising

a spurge tank for storing a quantity of water therein selectively connectable across said first coil,

means for diverting water flowing between said first coil and heater inlet to said spurge tank when the pressure of the water flowing between said first coil and heater increases to a first pre-selected maximum pressure value,

means for diverting water flowing between said first coil and heater inlet to said spurge tank when the temperature of the water flowing between said first coil and heater inlet increases to a first pre-selected maximum temperature value,

first check valve means for restraining the back-filling of said spurge tank with water flowing from said source and from the upstream end of said first coil,

second check valve means for restraining the back flow of water to said source from said spurge tank and said first coil,

means for venting water and steam from said spurge tank to a sewer line when the pressure of water in said spurge tank reaches a second pre-selected pressure valve, and

means for venting water and steam from said spurge tank when the temperature of water in said spurge tank reaches a second pre-selected temperature value.

4,211,188

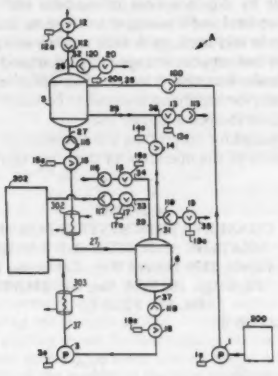
METHODS AND APPARATUS FOR FEEDING LIQUID INTO APPARATUS HAVING HIGH PRESSURE RESISTANCE

Thomas Y. C. Chen, 5509 King Arthur Ct., Westmont, Ill. 60559

Continuation-in-part of Ser. No. 841,490, Oct. 12, 1977, Pat. No. 4,165,718. This application Mar. 23, 1979, Ser. No. 23,334

Int. Cl.[2] F22D *5/28*

U.S. Cl. 122—451 R **63 Claims**



1. A high efficiency energy saving condensate feeding system for feeding condensate into a high pressure vapor generator of more than 85 psig vapor pressure, comprising:

a first and a second energy saving high pressure vessel filled with the same kind of vapor as is generated by said generator and said vapor in said first vessel being high pressure vapor of which most of the energy content is to be restored to said generator;

means for charging condensate into said second vessel to fill said second vessel up to a substantial liquid level in said second vessel;

means for selectively isolating said second vessel;

at least two levels of high pressure vapor distributing tubes with multiple openings under said liquid level in said second vessel, and some of the openings of said tube at upper level are directed to inject vapor to lower level to slow down the upward motion of a portion of vapor released from a vapor distributing tube at lower level for effective vapor condensing;

means for releasing said high pressure vapor in said first vessel into said second vessel and to inject said vapor from said vapor distributing tubes at various elevations into the condensate in said second vessel for reducing the vapor pressure by condensing a portion of said vapor and to preserve the energy content of said condensed vapor;

means for charging said condensate from said second vessel into said first vessel;

means for isolating said first vessel from said second vessel;

means for bleeding high pressure vapor from said high pressure vapor generator into said first vessel to build up a pressure head in said first vessel for assisting condensate feeding into said generator;

means for charging said condensate from said first vessel into said generator until said first vessel is selectively drained while said vapor bleeding means is selectively in operation;

and means for selectively isolating said first vessel from said high pressure vapor generator.

4,211,189

INTERNAL COMBUSTION ENGINE WITH DUAL INDUCTION SYSTEM AND MORE PARTICULARLY TO COMBUSTION CHAMBER DESIGN THEREOF

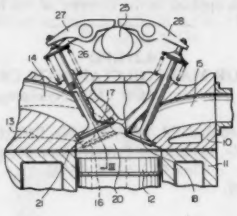
Kyugo Hamai, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 15, 1978, Ser. No. 961,044

Claims priority, application Japan, Jan. 12, 1978, 53/2274

Int. Cl.[2] F02B *19/16, 19/10*

U.S. Cl. 123—308 **7 Claims**



1. An internal combustion engine comprising:

a cylinder block having a cylinder formed therein;

a piston reciprocably mounted within said cylinder;

a cylinder head positioned over one end of said cylinder, said cylinder head having a surface and a cavity formed therein and arranged within said surface;

a main chamber formed by the clearance volume between said surface of said cylinder head and said piston;

an auxiliary chamber formed by said cavity;

a primary intake valve reciprocably mounted within said cylinder head and arranged within said surface;

a secondary intake valve reciprocably mounted within said cylinder head and arranged within said cavity;

said cylinder head having therein a primary intake port passage leading to said primary intake valve and adapted to direct a first fluid charge into said cylinder to swirl in said main chamber under all of the operating conditions of the engine; and

said cylinder head having therein a secondary intake port passage leading to said secondary intake valve and adapted to direct a second fluid charge into said cylinder in such a direction as to impede the swirling motion of the first fluid charge under predetermined operating conditions of the engine.

4,211,190
GROOVE GUIDED PISTON LINKAGE FOR AN INTERNAL COMBUSTION ENGINE

Robert Indech, 37 Mendon St., Worcester, Mass. 01604

Continuation-in-part of Ser. No. 881,192, Feb. 27, 1978, abandoned. This application Jun. 5, 1978, Ser. No. 912,385

Int. Cl.³ F02B *75/04, 75/32*

U.S. Cl. 123—48 B **6 Claims**

1. In an internal combustion engine having a cylinder, a piston reciprocable in said cylinder, and a connecting rod pivotally connected at one end to said piston, a housing wall extending integrally from said cylinder, said wall tapering outwardly and terminating in an annular bottom end, a drive shaft extending through said annular wall portion with its axis at right angles to the stroke of said piston in alignment therewith and linkage means between said connecting rod and said drive shaft for rotating said drive shaft, said linkage means positioning said connecting rod out of alignment with the axis of the piston stroke at the period of highest compression and ignition, said piston being motionless at the period of highest compression, said connecting rod moving out of alignment with the axis of the piston stroke during the motionless period of said piston, the power stroke and exhaust stroke of said linkage being identical and centered about the axis of said drive shaft; wherein said linkage includes a slotted crank arm at the end of said drive shaft, said connecting rod being linked to said crank arm, and means for guiding the lower end of said connecting rod around the end of said drive shaft, and said connecting rod is provided with a pin at right angles to it lower end said pin extending through said crank arm slot; and wherein said guide means comprises a groove cut into said housing wall, said groove comprising a lower first circle portion and a truncated upper portion formed by the arc of a second circle curving in the direction of the center of the first circle portion wherein curvature of the second circle portion is less than that of the first circle portion.

4,211,191
FUEL SUPPLYING DEVICE FOR INTERNAL COMBUSTION ENGINE

Yoshihisa Kawamura, Fujisawa, and Masaaki Saito, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 6, 1978, Ser. No. 940,096

Claims priority, application Japan, Oct. 14, 1977, 52/123757

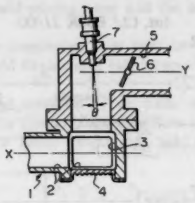
Int. Cl.² F02B *19/10, 75/18*

U.S. Cl. 123—52 M **8 Claims**

1. In an internal combustion engine having a combustion chamber

means defining an air induction passageway leading to said combustion chamber, said induction passageway including an upstream portion having a first longitudinal axis and a downstream portion having a second longitudinal axis, said upstream portion and said downstream portion interconnecting at a first predetermined angle to define an elbow;

a fuel injector disposed in said elbow to inject a jet of fuel through said downstream portion in the direction of said combustion chamber, said injector being oriented to inject said jet of fuel at a second predetermined angle with



respect to said second longitudinal axis which is directed back toward said upstream portion so that the flow of air entering said downstream portion from said upstream portion tends to deflect said jet of fuel so that it tends to follow said second longitudinal axis and substantially none of the fuel impinges on the walls of said downstream portion.

4,211,192
CAMSHAFT FOR AN INTERNAL COMBUSTION ENGINE

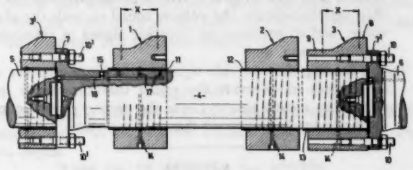
Peter Baumgartner, Wiesendangen, and Robert Kuhne, Frauenfeld, both of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Dec. 1, 1977, Ser. No. 856,487

Claims priority, application Switzerland, Dec. 10, 1976, 15565/76

Int. Cl.² F01L *1/04*

U.S. Cl. 123—90.6 **1 Claim**



1. A cam shaft comprising

a plurality of coaxially disposed elongated cam shaft portions, each shaft portion having an integral flange at one end;

a discoid cam member releaseably secured at an opposite end of each shaft portion;

a plurality of screws releaseably securing said flange of one shaft portion to a discoid member of an adjacent shaft portion; and

a plurality of sleeves shrunk-fit on each shaft portion, each said sleeve having a conical outer surface;

a plurality of cams mounted on each shaft portion, each said cam being shrunk-fit on a respective outer surface of a respective sleeve;

an oil pressure line in each shaft portion communicating with an inside surface of at least one sleeve to deliver pressurized oil thereto to permit turning of said one sleeve on said shaft portion; and

a radial bore in each respective cam for passage of a pressurized medium to an inner surface thereof to permit removal of said respective cam from said shaft portion.

4,211,193

SPEED REGULATING SYSTEMS

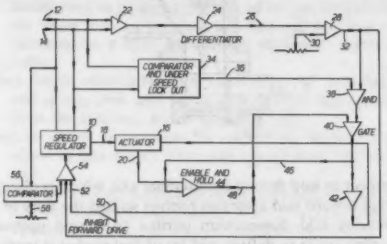
Michael D. Cox; Norman Hunt, and Kenneth W. Colver, all of Rugby, England, assignors to Associated Engineering Limited, England

Filed Jan. 16, 1978, Ser. No. 869,649

Claims priority, application United Kingdom, Feb. 10, 1977, 05611/77

Int. Cl.[2] B60K *31/00*

U.S. Cl. 123—352 **5 Claims**



1. A speed regulating system for regulating the speed of an engine-driven vehicle, comprising

engine power control means for controlling the power of the engine of the vehicle,

means responsive to the actual vehicle speed to produce an input signal representing actual vehicle speed,

means producing a speed reference signal representing a pre-set value of vehicle speed,

speed regulating means connected to respond to the two said signals and to produce an output signal when the actual vehicle speed exceeds the pre-set value,

means feeding the output signal to the engine power control means whereby to tend to prevent the vehicle from being driven by the engine at a speed in excess of the pre-set value,

override control means connected to receive the input and speed reference signals and to detect therefrom when the vehicle is decelerating at at least a predetermined rate and that, simultaneously, the vehicle speed exceeds the pre-set value, and to produce an override signal in response to such detection, and

means feeding the override signal to the engine power control means to override the effect thereon of the speed regulating means and to cause the engine power control means to tend to increase the engine power.

4,211,194

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Tadashi Hattori, Okazaki; Daisaku Sawada, Susono; Kenji Goto, Susono; Takashi Shigematu, Susono; Yuji Takeda, Susono; Hiroaki Yamaguchi, Aichi, and Minoru Nishida, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 2, 1977, Ser. No. 847,812

Claims priority, application Japan, Nov. 10, 1976, 51/135501; Japan Nov. 11, 1976, 51/135548

Int. Cl.[2] F02P *5/04*

U.S. Cl. 123—417 **2 Claims**

1. An ignition system for internal combustion engines comprising:

an angular position detector for detecting a predetermined angular position of an engine to produce an angular position signal;

a pressure detector for detecting pressures in a cylinder of said engine to produce a pressure signal varying with said pressures;

a knock detection circuit, connected to said pressure detector and including filter means, for producing a knock signal when said filter means, receiving said pressure signal, produces an output signal having frequencies much higher than that of said pressure signal equal to the rotational speed of said engine;

an advance/retard control circuit connected to said knock detection circuit, for increasing and decreasing a retard angle quantity in accordance with the presence and absence of said knock signal;

an ignition timing computer circuit, connected to said angular position detector, said knock detection circuit and said advance/retard control circuit, for starting computation of an ignition timing of said engine in response to said angular position signal and determining said ignition timing depending on an ignition timing pattern preset in accordance with operating conditions of said engine, said ignition timing computer circuit retarding said ignition timing computed depending on said ignition timing pattern in proportion to the retard angle quantity determined by said advance/retard control circuit to thereby prevent the knock of said engine;

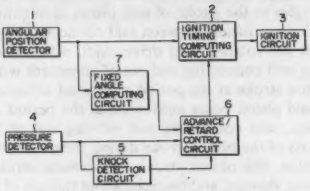
wherein said ignition timing computer circuit includes:

a capacitor;

charging means for charging said capacitor during a predetermined rotational angles of said engine in response to said angular position signal;

discharging means, for discharging said capacitor after the termination of charging said capacitor to determine said ignition timing at the completion of discharging said capacitor; and

current control means for controlling the current for either charging or discharging said capacitor in response to an



output of said advance/retard control circuit to thereby retard said ignition timing; and wherein said advance/retard control circuit includes:

another capacitor and resistors; and

charge/discharge control means for charging and discharging through said resistors said another capacitor in accordance with absence and presence of said knock signal.

2. An ignition system for internal combustion engines comprising:

an angular position detector for detecting a predetermined angular position of an engine to produce an angular position signal;

a pressure detector for detecting pressures in a cylinder of said engine to produce a pressure signal varying with said pressures;

a knock detection circuit, connected to said pressure detector and including filter means, for producing a knock signal when said filter means, receiving said pressure signal, produces an output signal having frequencies much higher than that of said pressure signal equal to the rotational speed of said engine;

an ignition timing computer circuit, connected to said angular position detector and to said knock detection circuit, for starting computation of an ignition timing of said engine in response to said angular position signal and determining said ignition timing depending on an ignition timing pattern preset in accordance with operating conditions of said engine, said ignition timing computer circuit retarding said computed ignition timing depending on said ignition timing pattern in response to said knock signal to

thereby prevent the knock of said engine; and further including

a fixed angle computer circuit connected to said angular position detector, for determining a predetermined reference angular position of said engine based on said angular position signal;

reference pressure memory means, connected to said pressure detector and said fixed angle computer circuit, for memorizing the pressure detected by said pressure detector at said reference angular position;

a maximum pressure memory means, connected to said pressure detector, for memorizing the maximum pressure detected by said pressure detector; and

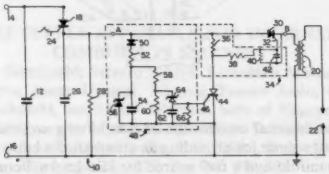
ignition timing pattern setting means for presetting said ignition timing pattern in accordance with two pressures memorized by said two memory means so that the ratio between said two pressures is kept at a constant value.

4,211,195

OVERSPEED IGNITION SYSTEM

Richard Zechlin, Beloit, Wis., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Oct. 12, 1977, Ser. No. 841,584
Int. Cl.[2] F02P *1/00*
U.S. Cl. 123—335 **7 Claims**



1. An ignition system for an internal combustion engine comprising spark ignition means including an ignition transformer, an electrical energy source means operative to energize said spark ignition means by providing electrical energy to said ignition transformer, controlled switching means operatively connected between said electrical energy source means and said spark ignition means to selectively pass energy from said electrical energy source means to energize said spark ignition means, trigger means operative in timed relation to the speed of said internal combustion engine to activate said controlled switching means, said controlled switching means operating under the control of said trigger means to pass pulses of energy from said electrical energy source means to said ignition transformer in timed relation to engine speed, and overspeed cutout means connected between said controlled switching means and said ignition transformer, said overspeed cutout means operating to sense the time interval between pulses of energy passed by said controlled switching means and to open the circuit between said controlled switching means and said ignition transformer to prevent a pulse of energy from reaching said ignition transformer when the time interval between said pulse of energy and the next preceding pulse of energy is less than a predetermined time.

4,211,196

CARBURETOR

Emmanuel J. H. Poirier d'Ange d'Orsay, Toulouse, France, assignor to Societe pour l'Equipement de Vehicules, Issy-les-Moulineaux, France

Filed May 5, 1978, Ser. No. 902,915
Claims priority, application France, May 12, 1977, 77 14558
Int. Cl.[2] F02M *7/12*
U.S. Cl. 123—439 **11 Claims**

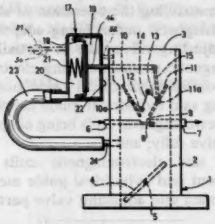
1. A device for feeding a fuel/air mixture for fuelling an internal combustion engine, comprising:

(a) fluid jet carburettor means having a combustion air path, a mixing zone in said combustion air path for fuel/air contact, a fuel inlet to said mixing zone and a fuel outlet for recycled fuel from said mixing zone whereby, in use, a flow of fuel passes from said fuel inlet to said fuel outlet across the flow of combustion air at said mixing zone in direct contact with the combustion air;

(b) fuel/air mixture flow rate control means interposed between the said mixing zone and the outlet end of the device;

(c) sensor means responsive to at least one parameter of at least one of said device and said internal combustion engine;

(d) means in said combustion air path, upstream of said mixing zone, for concentrating the flow of combustion air to a greater or lesser extent onto said mixing zone for



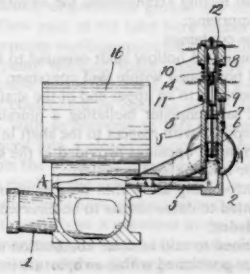
maintaining the richness of the fuel/air mixture leaving said fluid jet carburettor means at a desired value in response to signals from said sensor, the means for concentrating the combustion air at the zone of direct contact being a movable concentrating vane means, a suction tapping in the combustion air path between said zone of direct contact and the control vane means, and said sensor means comprising an aneroid capsule comprising first and second chambers and a flexible diaphragm which separates said first and second chambers, said first chamber being connected to said suction tapping, said first chamber of the aneroid capsule being also connected to atmosphere, and wherein a solenoid valve operated in response to engine operating parameters is included between said first chamber and the atmosphere.

4,211,197

COMPRESSIVE PRESSURE AUGMENTATION DEVICE

Mitsuji Kawai, No. 26, 1-chome Kaname-cho, Toshima-ku, Tokyo, Japan

Filed Jul. 19, 1978, Ser. No. 925,979
Int. Cl.[2] F02N *23/04*
U.S. Cl. 123—585 **7 Claims**



1. A compressive pressure augmentation device for an engine of a vehicle, comprising:

air supply means for supplying air to said engine;

air cleaning means for cleaning said air supplied to said engine;

suction means disposed between said air supply means and said air cleaning means, and operably connecting said air cleaning means to said air supply means;

valve means for controlling the amount of said air supplied to said engine in accordance with the speed of said vehicle, said valve means comprising an adjusting valve which includes a cylindrical valve and a valve rod;

said valve means being operably connected with said suction means;

iron cores mounted about said valve rod at vertically-spaced positions along said valve rod;

a cylindrical guide member connected to said adjusting valve surrounding said iron cores in a peripherally spaced relationship thereto;

electromagnetic means operably connected to said valve means for controlling the operation of said valve means, said electromagnetic means being adapted to selectively open said adjusting valve fully or partially;

said electromagnetic means including electromagnetic coils mounted about said cylindrical guide member at different heights along said cylindrical guide member;

one of said electromagnetic coils being adapted to open said adjusting valve fully; and

the other of said electromagnetic coils being slidably mounted about said cylindrical guide member and being adapted to open said adjusting valve partially.

4,211,198

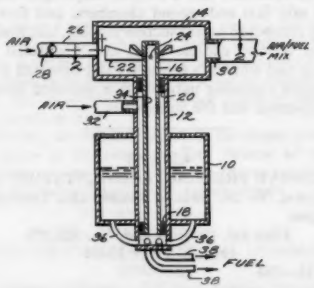
AIR/FUEL MIXING ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Charles W. Thomas, Jr., Flatwoods, Ky., assignor to Leonard Furman, Bexley, Ohio, a part interest

Filed Jul. 5, 1978, Ser. No. 922,054

Int. Cl.[2] F02M *17/18*

U.S. Cl. 123—592 **9 Claims**



1. An air/fuel mixing arrangement for an internal combustion engine comprising:

a fuel storage container;

a rotatably mounted hollow shaft oriented to have an open lower end positioned within said container;

an impeller secured to an upper end of the shaft for rotation therewith, said impeller including a plurality of blades radially disposed with respect to the shaft in proximity to radially arranged openings provided in the shaft;

a chamber for housing said impeller;

means for introducing air within the chamber, said means being oriented to cause the air to be directed towards the impeller blades;

an adapter joined to said internal combustion engine;

a throttle plate positioned within an aperture in said adapter, said throttle plate being selectively movable to vary the effective opening of said aperture; and

passage means connecting the chamber and the aperture whereby in response to the positioning of the throttle to open said aperture, fuel is drawn from the lower end of the shaft, is atomized within the shaft by said pressurized air and then is passed through the openings in the shaft so as to be mixed by the impeller with the air introduced within the chamber, the mixture being transported to said engine via the passage means and the adapter.

4,211,199

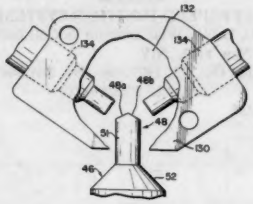
COMPUTER CONTROLLED SONIC FUEL SYSTEM

Arthur K. Thatcher, Merritt Island, Fla. 32952, and Ed R. McCarter, Maitland, Fla., assignors to Arthur K. Thatcher, Merritt Island, Fla.

Division of Ser. No. 593,001, Jul. 3, 1975, which is a division of Ser. No. 293,377, Sep. 29, 1972, Pat. No. 4,100,896. This application Feb. 2, 1978, Ser. No. 874,522

Int. Cl.[2] F02H *5/00*

U.S. Cl. 123—445 **11 Claims**



1. In an internal combustion engine having an intake manifold, an air source for providing an airstream for entry into said intake manifold and a fuel source for said internal combustion engine, a fuel system for providing fuel from said fuel source to the airstream for the intake manifold at a point before said intake manifold reaches the combustion area for said engine, comprising fuel input means connected to supply fuel from said fuel source, fuel dispersion means mounted adjacent the path of said airstream for receiving fuel at a point adjacent the path of the airstream and redirecting said fuel as a fuel dispersion at an angle relative to the direction of the flow of said airstream and toward the center of the airstream at a point before the airstream reaches the combustion area for said engine, said fuel dispersion means having at least one inclined fuel receiving surface extending toward said airstream, the outermost end of said fuel receiving surface terminating at an apex directed toward and spaced from the center of said airstream, and fuel directing means connected to receive the fuel from said fuel input means for directing fuel against said fuel receiving surface, said fuel directing means being mounted in spaced relationship to said fuel receiving surface, said fuel receiving surface being angularly inclined relative to said fuel directing means to redirect fuel from said fuel directing means past said apex toward the center of said airstream.

4,211,200

VACUUM FORCE AMPLIFIER FOR INTERNAL COMBUSTION ENGINE

Rodolfo Rocchio, Ingolstadt; Fritz Naumann, Stammham, and Heinrich Strotkötter, Ingolstadt, all of Fed. Rep. of Germany, assignors to Audi Nsu Auto Union Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,417

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717685

Int. Cl.[2] F02M *39/00;* **B60T** *13/00*

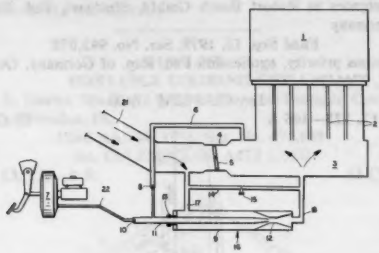
U.S. Cl. 123—445 **7 Claims**

1. A system comprising:

an internal-combustion engine having a throttle through which intake air passes and having an upstream side and a downstream side;

an idle-speed circuit shunting said upstream and downstream sides of said throttle;

an injector-type jet pump in said idle circuit having an output connected to said downstream side, a high-pressure



input connected to said upstream side, and a low-pressure input; and

a vacuum-actuated auxiliary device having a vacuum line connected to said low-pressure input.

4,211,201

FUEL SUPPLY APPARATUS FOR INTERNAL COMBUSTION ENGINES

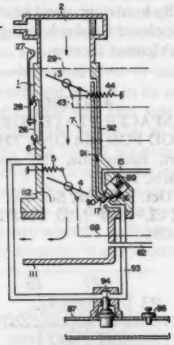
Masaharu Sumiyoshi; Setsuro Sekiya; Katsuhiko Motosugi, all of Toyota; Junzo Uozumi, Nagoya; Tsuneo Ando, Chiryu; Yuzo Takeuchi, and Mikio Minoura, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Asian Industry Co., Ltd., Ohbu, both of, Japan

Filed Apr. 27, 1978, Ser. No. 900,506

Claims priority, application Japan, May 4, 1977, 52/51554

Int. Cl.[2] F02M *69/00*

U.S. Cl. 12—463 **14 Claims**



1. A fuel supply apparatus for an internal combustion engine, comprising an intake conduit leading to the internal combustion engine; a throttle valve disposed in said intake conduit; an air valve disposed in said intake conduit upstream of said throttle valve so as to define an air pressure chamber within said intake conduit in cooperation with said throttle valve; feedback control means for controlling said air valve including means for generating a signal of a magnitude proportional to pressure prevailing within said air pressure chamber and means responding to said signal for operating said air valve so that the pressure in said air pressure chamber be maintained at a substantially constant preset value; a fuel feed conduit for supplying fuel to a fuel discharge nozzle opened in said intake conduit; variable throttle means interlocked with said air valve and controlled so as to provide a flow area proportional to the opening degree of said air valve; means for maintaining a pressure difference produced across said variable throttle means at a substantially constant level; and means for automatically varying proportional ratio of said signal magnitude to the pressure in said air pressure chamber in dependence on at least one of a plurality of environmental and operating conditions of said internal combustion engine, wherein air-fuel ratio of air-fuel mixture supplied to the internal combustion engine is corrected to an optimum value for the environmental and/or operating conditions of said engine through variation of said preset value of the pressure within said air pressure chamber.

4,211,202

PUMP NOZZLE FOR AIR-COMPRESSING INJECTION INTERNAL COMBUSTION ENGINE

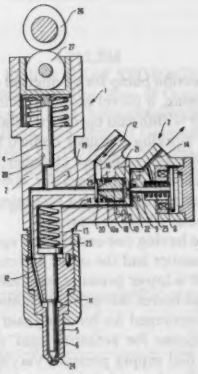
Günther Häfner, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 14, 1978, Ser. No. 942,162

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742466

Int. Cl.[2] F02M *57/02, 39/00;* **B05B** *1/30*

U.S. Cl. 123—457 **8 Claims**

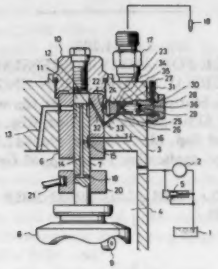


1. A pump nozzle for an air-compressing internal combustion engine, the pump nozzle including a nozzle body means, a nozzle needle arranged in the nozzle body means, a mechanically actuated pump piston means for delimiting a pump working space, an inlet bore means operatively connected with the pump working space for feeding fuel to the nozzle needle, return bore means for returning leakage fuel, and a control means for influencing a delivery of fuel by the pump nozzle, characterized in that a discharge bore means communicates with the return bore means, the control means includes a valve means longitudinally displaceably guided in a chamber means arranged in a flow path of the inlet bore means at a position upstream of the pump working space for controlling a pressure of fuel in the pump working space, means are provided for actuating said valve means in accordance with a rhythm of the engine and for controlling an opening of the discharge bore means so that, with an increase in fuel pressure, said valve means is displaced into a closed position separating the inlet bore means from the pump working space, said control means are operable to displace the valve means to an open position by opening of the discharge bore means, and in that a substantially uninterrupted throttle bore is provided in the valve means for operatively connecting the inlet bore means with the return bore means by way of the discharge bore means when said discharge bore means is open, and in that the valve means includes a forward part which projects into the inlet bore means in a cross-section-reducing manner when the valve means is in the open position.

4,211,203
FUEL INJECTION PUMP

Masayoshi Kobayashi, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1978, Ser. No. 971,914
Claims priority, application Japan, Dec. 29, 1977, 52-176249
Int. Cl.[3] F02M *39/00, 41/08*
U.S. Cl. 123—406 2 Claims



1. In a fuel injection pump for an internal combustion engine, including: a housing, a barrel mounted within said housing; a plunger mounted within said barrel for axial and rotary motion therein; a pump working chamber defined by the housing, the barrel and the plunger; a suction chamber formed within said housing; and outlet pressure lines for connecting said pump working chamber with associated fuel injection nozzles;

the improvement which comprises:

a relief passage having one end thereof opening in said pump working chamber and the other end communicating with a zone under a lower pressure, said relief passage extending from said barrel through said housing;

a valve means arranged for blocking said relief passage; and

an actuating means for actuating said valve means in response to a fuel supply pressure varying as a function of engine rotational speed, said actuating means being arranged to actuate said valve means to permanently keep said relief passage closed except in a predetermined low engine speed range;

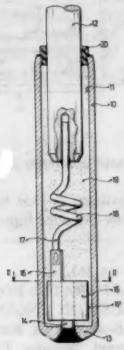
said valve means comprising a bore formed within said pump housing and communicating on one side with said relief passage and on the other side with a zone under a lower pressure; a piston slidably received with said bore, said piston including an annular groove formed in an outer periphery thereof, and a restriction passage having one end thereof radially opening in said annular groove and the other end communicating with said lower pressure zone; and

said actuating means comprising a passage means having one end thereof communicating with one end of said bore and the other end thereof with a fuel pump arranged for rotation at a speed which is a function of the rotational speed of the engine; said pressure means comprising a fuel supply line having two ends, one end of said fuel supply line communicating with said suction chamber formed within said pump housing, which is supplied with a fuel pressure which is a function of the engine speed from said fuel pump, and the other end of said fuel supply line being arranged for communication with said pump working chamber; a further annular groove formed around an outer periphery of said barrel and intersecting with said fuel supply line; and a communicating port formed within said housing and providing communication between said further annular groove and said bore.

4,211,204
GLOW PLUG ARRANGEMENT

Jens Glauner, Tamm; Günther Kauhl, Affalterbach; Hannes Pflug, Gerlingen; Leo Steinke, Waiblingen-Hegnach, and Helmut Weyl, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 942,078
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746496
Int. Cl.[2] F02M *57/00*
U.S. Cl. 123—145 A 10 Claims



1. Glow plug arrangement comprising

a tubular housing (10) closed at one end thereof;

a spiral heating element (15) formed as a heating band or ribbon wound in an essentially co-planar spiral winding, positioned adjacent the closed end of the glow plug;

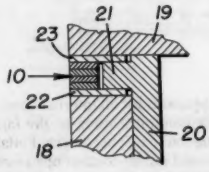
an insultating layer or coating on one side of the ribbon to insulate the turns of the ribbon from each other;

and an electrically insulating, good heat-conductive material (19) filling the closed tubular housing and embedding said spiral heating element therein.

4,211,205
LAMINATED SPACER PLATE FOR ENGINES AND METHOD FOR MAKING THE SAME

David A. Lockhart, Bartonville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 26, 1978, Ser. No. 955,083
Int. Cl.[2] F02F *1/00;* F16J *15/06*
U.S. Cl. 123—193 CH 10 Claims



1. In an apparatus of the type having a block (18), a liner (20) defining a bore therein, an annular flange (21) formed on said liner (20) and supported on said block (18), a head (19) disposed on said block (18) to cover said bore, a spacer plate (10) having a thickness substantially the same as the thickness of said flange and disposed in sandwiched relationship between said block (18) and said head (19), and a sealing gasket (22,23) disposed between said spacer plate (10) and each of said block (18) and said head (19), the improvement comprising, said

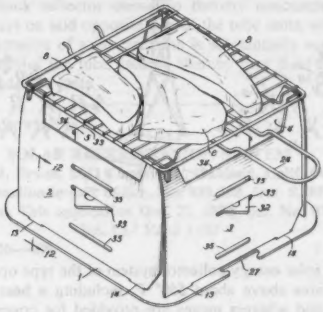
spacer plate (10) being laminated to comprise a plurality of superimposed flat sheets (11–14) secured together in sealed relationship at contacting surfaces thereof to form a composite spacer plate (10), each of said sheets (11–14) having at least one opening (16) pre-formed therethrough prior to securance of said sheets (11–14) together.

4,211,206

PORTABLE COOKING GRILL

Rolf E. Darbo, Madison, Wis., assignor to Portable Cookery, Inc., Wheaton, Ill.

Filed Apr. 14, 1976, Ser. No. 676,699
Int. Cl.² F24B 3/00; A47J 33/00
U.S. Cl. 126—9 R **13 Claims**



1. In a portable cooking grill having a rectilinear base plate and four identical side walls respectively hinged to the respective sides thereof and means for fastening adjoining side walls together in upright position, the hinge structures which respectively join the respective side walls to the base plate each comprising a pair of slots in said base plate spaced apart and equally spaced inwardly from and oriented parallel with one edge of the base plate, a tongue extending from the associated side wall through each of said slots in said base plate, and means for retaining each said tongue in its associated slot, said slots being sufficiently wide and said side wall being sufficiently resilient to permit the side wall to hinge inwardly to overlie the base plate in a folded position at which it is in contact with the underlying structure throughout at least most of the confronting areas, the improvement wherein the width of the sidewalls is less than the distance between opposite sets of slots in said base plate whereby in folding the grill the four walls may be hinged inwardly in any sequence.

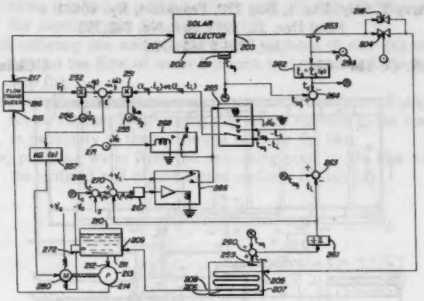
4,211,207

HEATING AND COOLING SYSTEMS

Stephen Molivadas, 2800 Upton St., NW., Washington, D.C. 20008

Filed Apr. 2, 1974, Ser. No. 457,271
Int. Cl.² F24J 3/02
U.S. Cl. 126—433 **50 Claims**

1. A heating system comprising radiant heat collector means for absorbing radiant heat and evaporating liquid-vapor working fluid and means for transferring the absorbed heat to a medium to be heated when the saturated vapor temperature of said fluid in said absorbing and evaporating means is below the temperature of said medium; said heat transfer means comprising means for compressing working fluid vapor exiting said absorbing and evaporating means, means for condensing the compressed working fluid vapor and releasing heat to said medium, and throttling means for expanding or metering the condensed working fluid before said fluid is evaporated in said absorbing and evaporating means; and means for selecting and maintaining the saturated vapor temperature of said fluid in said collector means independently of the temperature of said



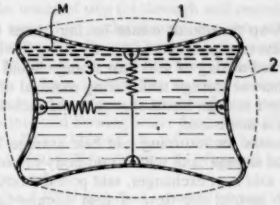
medium and of the heating load imposed by said medium on said heating system.

4,211,208

CONTAINER FOR A HEAT STORAGE MEDIUM

Friedrich Lindner, Stuttgart, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Dec. 13, 1977, Ser. No. 860,076
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658720
Int. Cl.² B65D 25/18, 89/02; F28F 9/00
U.S. Cl. 126—400 **11 Claims**



7. Apparatus for storing a heat storage medium which changes between solid and fluid states to store and release heat, comprising

(a) flexible wall means defining an enclosed hollow container, said wall means being relatively displaceable between contracted and expanded conditions in which said container assumes smaller and larger volumes, respectively;

(b) means connected with and biasing said wall means toward the contracted condition; and

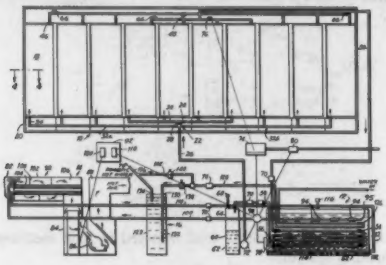
(c) a quantity of a latent heat storage medium filling said container when said wall means is in the contracted condition, said medium having the property of being successively changeable, upon initial removal of heat, from a fluid state to a solid state, and upon subsequent removal of heat, to a condition of greater density, thereby resulting in a decrease in the volume of said solid medium with said wall means remaining in the contracted condition, whereby upon addition of heat to said solid medium, the density of said solid medium decreases, thereby resulting in an increase in the volume of said solid medium and an attendant expansion of said wall means to the expanded condition.

4,211,209

METHOD AND APPARATUS FOR COLLECTING AND DOMESTIC USE OF SOLAR HEAT

Larry T. Gay, Rte. 1, Box 278, Frankfort, Ky. 40601

Filed Dec. 21, 1977, Ser. No. 862,752
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—422 4 Claims



1. A solar heating collecting and storing system comprising:
a thermal storage tank having a top and a bottom effective to contain a heat storage liquid;
a horizontally disposed heat exchanger elevated above said bottom;
a body of porous material between said bottom and said heat exchanger;
at least one solar heat collecting means for collecting solar heat;
means for circulating a collecting liquid through said collecting means for transferring collected heat to said heat exchanger;
pick-up distributor means horizontally disposed at the top of said heat storage liquid extending along substantially all of at least one horizontal dimension of said thermal storage tank;
said pick-up distributor means having means for admitting said heat storage liquid uniformly along it whereby turbulence and mixing of said heat storage liquid remaining in said thermal storage tank during removal of a portion of said heat storage liquid through said pick-up distributor means is minimized;
return means for returning said heat storage liquid to said thermal storage tank within said body of porous material below said heat exchanger, said porous body being effective to restrict the flow of heat storage liquid upward therethrough whereby turbulence and mixing of heat storage liquid due to heat storage liquid being returned by said return means is minimized;
said return means including discharge distributor means horizontally disposed at the bottom of said thermal storage within said body of porous material extending substantially all of at least one horizontal dimension of said thermal storage tank;
said discharge distributor means having means for discharging returned heat storage liquid uniformly along it;
a hot air furnace having a hot air conduit and a cold air return;
a liquid-to-air heat exchanger in said cold air return;
means for directing cold air in said cold air return a plurality of passes through said liquid-to-air heat exchanger;
means for passing said heat storage liquid from said pick-up distributor means through said liquid-to-air heat exchanger and for returning it to said return means whereby air returning to said hot air furnace is warmed by said liquid-to-air heat exchanger;
first thermostat means responsive to an air temperature below a first air temperature for operating said means for passing; and
second thermostat means responsive to an air temperature below a second air temperature lower than said first air temperature for operating said hot-air furnace to add furnace heat to the air heated by said liquid-to-air heat exchanger.

4,211,210

HIGH TEMPERATURE SOLAR ABSORBER COATING AND METHOD OF APPLYING SAME

Adolf H. Muenker, Somerset, and Archie R. Young, II, Montclair, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 764,851, Feb. 2, 1977, abandoned. This application Mar. 1, 1978, Ser. No. 882,438
Int. Cl.[2] F24J *3/02*; B32B *15/04*
U.S. Cl. 126—438 17 Claims

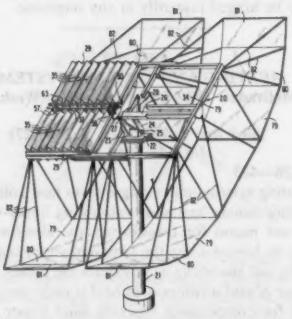
1. In a solar energy collector system of the type operable at temperatures above about 550° F. including a heat transfer member and wherein means are provided for concentrating incident solar radiation by a factor of from about 40 to 2000 to impinge on said heat transfer member, the improvement comprising a nonselective radiation absorbing surface coating on said heat transfer member, said surface coating being selected from ferrites, oxides of nickel, cobalt, iron, strontium and molybdenum and mixtures thereof having a solar absorptance greater than about 0.90 at wavelengths of from about 0.35μ to about 3.0μ.

4,211,211

SOLAR ENERGY COLLECTOR AND TRANSFER APPARATUS

Gerald P. Toomey, Warfordsburg; John L. Grove, Greencastle, and John R. Fries, Meadowbrook, all of Pa., assignors to JLG Industries, Inc., McConnellsburg, Pa.

Filed Mar. 16, 1978, Ser. No. 887,358
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—439 15 Claims



1. A solar energy collector and transfer apparatus comprising a main support frame, a plurality of spaced parallel solar energy absorber-transfer tube units mounted on said main support frame and arranged in a common plane, solar energy

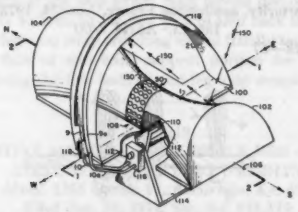
intercepting and concentrating panels mounted on said main support frame and arranged in tandem relationship on opposite sides of said tube units, said panels comprising coacting pairs of parabolically curved reflector panels on opposite sides of said tube units and projecting on opposite sides of said plane in which said tube units are located and longitudinally of the tube units in parallel relationship thereto, each side-by-side pair of reflector panels defining a receiving aperture and an exit aperture, a tube unit disposed in each exit aperture between tandemly arranged pairs of said panels; and back reflector means supported from said main support frame and spaced from said tube units, whereby solar rays impinging directly on the parabolic reflectors on one side of the tube units are concentrated on the sun side of the tube units, and the parabolic reflectors on the opposite side of the tube units receive sun rays reflected from the back reflector means to thereby concentrate the reflected rays on said opposite side of the tube units, whereby the concentration of solar radiation is substantially equalized on both sides of the tube units to thereby heat fluid flowing through said tube units.

4,211,212

SOLAR REFRIGERATION SYSTEM

Raymond J. Braun, 1641 Church St., Oakland, Calif. 94621

Continuation-in-part of Ser. No. 839,598, Oct. 5, 1977, abandoned. This application Dec. 29, 1978, Ser. No. 974,439
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—439 **7 Claims**



1. A solar energy refrigeration system comprising
a base support,
a first reflector defining a concave parabola of revolution having first and second flared ends, an axis of revolution and a central saddle region, said reflector mounted on said base support,
means for absorbing solar energy mounted on said base support and located proximate said central saddle region of said first reflector,
said means for absorbing solar energy having means defining an arcuate housing having a solar radiation absorbing surface,
a second reflector defining an arc located proximate the focus of said first reflector and adapted to reflect solar energy received from said first reflector on to said means for absorbing solar energy, and
means for cooling a space, said means connected to said means for absorbing solar energy.

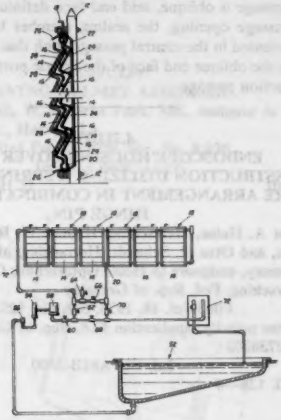
4,211,213

SOLAR PANEL

Roland N. Nissen, 4904 Sullivan, Wichita, Kans. 67204, and Lyle H. Soldan, 2815 Wilmohr Dr., Wichita, Kans. 67223

Filed Sep. 21, 1978, Ser. No. 944,546
Int. Cl.[2] F24J *3/02*; F28F *3/14*
U.S. Cl. 126—452 **11 Claims**

1. A process for heating water in a swimming pool, or the like, comprising:
(a) dimpling at least one of at least two corrugated heat retention surfaces at a depth between about ¼ inch and ½ inch;
(b) mating said heat retention surfaces; said mated surfaces being retained at a distance from each other depending on the depth of said dimpling step (a);
(c) orificing one end of said mated surfaces of step (b) to control the flow of water between said mated surfaces of step (b);
(d) installing at least one pair of said mated surfaces of step (c) on a means for exposing said mated surfaces to the sun in proximity to the swimming pool, or the like;
(e) pumping water from the swimming pool, or the like, to the orificed end of said mated surfaces of step (d);



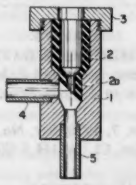
(f) flowing the water of step (e) through said mated surfaces of step (e) toward an outlet therein at a rate of between about 10 lbs./sq. ft. of mated heat retention surface/min. and about 200 lbs./sq. ft. of mated heat retention surface/-min. such as to form a water film exposed to the sun, said flow rate being determined by said orificing step (c);
(g) absorbing into said flowing water film of step (f) between about 1250 BTU's/day/sq. ft. of mated heat retention surface and 2500 BTU's/day/sq. ft. of mated heat retention surface; and
(h) returning said BTU absorbed water of step (g) from said outlet to said swimming pool, or the like.

4,211,214

END PLUG FITTING FOR AN ENDOSCOPE

Kiyoshi Chikashige, Tsurugashima, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1977, Ser. No. 810,462
Claims priority, application Japan, Jul. 1, 1976, 51-78278
Int. Cl.[2] A61B *1/00*
U.S. Cl. 128—4 **4 Claims**



1. An end plug fitting for an endoscope adapted for the insertion and removal of a medical instrument, such as a forceps, therethrough, comprising:

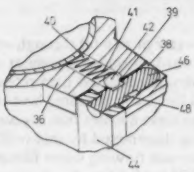
(a) a mouthpiece member having a central passage therethrough defining an instrument insertion opening at one end and an instrument guide channel at the other end,
(b) a suction passage defined in the mouthpiece member intersecting the central passage, and
(c) a tubular sealing member disposed in the central passage in the insertion opening end thereof and including a nozzle portion adjacent the suction passage intersection,
(d) the nozzle portion having an inner diameter substantially equal to the diameter of a medical instrument to be inserted therethrough and smaller than the inner diameter of the guide channel, and an end face formed such that the angle between said end face and the axis of the central passage is oblique, said end face defining an oval central passage opening, the sealing member being rotationally oriented in the central passage such that the oval opening in the oblique end face of the nozzle portion confronts the suction passage.

4,211,215

ENDOSCOPE HOUSING COVER HINGE CONSTRUCTION UTILIZING A SPRING, BALL AND BORE ARRANGEMENT IN COMBINATION WITH A HINGE PIN

Helmut A. Heine, Herrsching; Helmut W. Rosenbusch, Weilheim, and Otto H. Schmidt, Herrsching, all of Fed. Rep. of Germany, assignors to Heine Optotechnik GmbH & Co. KG, Herrsching, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,774
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738203
Int. Cl.[2] A61B *1/00*
U.S. Cl. 128—4 **6 Claims**



1. An endoscope, especially a rectoscope, comprising a tube, a head housing and a detachable cover, said tube being connected to said head housing, said housing being adapted to be closed at the end opposite said tube by said cover, and releasable hinge means for attaching said cover to said housing,
a lug attached to said housing and an axial pin attached to said cover,
said hinge means comprising said axial pin with an annular groove, a first bore in said lug, a stop-ball mounted in projecting relation into said first bore, and spring means for loading said stop-ball to engage in said annular groove when said axial pin is inserted in said first bore.

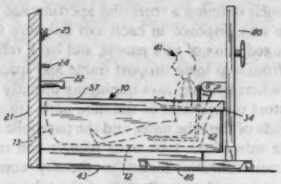
4,211,216

WHIRLPOOL BATH

John D. Burgess, Loretto, and Virgil J. Jacuzzi, Islington, both of Canada, assignors to Jacuzzi Bros., Incorporated, Little Rock, Ark.

Filed Nov. 7, 1978, Ser. No. 958,333
Int. Cl.[2] A61H *9/00*
U.S. Cl. 128—66 **12 Claims**

1. In a whirlpool bath comprising:
a tub having a base, sides, and a rim;
a frame supporting said tub;
a circulating pump;
outlet port means connected to said pump and disposed in said sides of said tub to expel a mixture of air and water into said tub in the form of a hydrotherapeutic jet;
inlet port means connected to said pump through which water from said tub is returned to said pump for recirculation;
the improvements of:



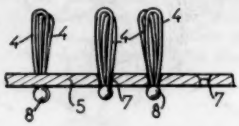
a base disposed beneath said frame elevating said tub and having dimensions on all sides less than said frame such that a continuous U-shaped recess is formed between said frame and a floor for accommodating patient care and for receiving patient handling accessories to allow the accessories to be moved adjacent said frame.

4,211,217

BRUSH FOR BRUSHING THE HAIR OR MASSAGING THE CUTANEOUS COVERING

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Apr. 23, 1979, Ser. No. 32,686
Claims priority, application France, Apr. 24, 1978, 78 12062
Int. Cl.[2] A61H *7/00*
U.S. Cl. 128—67 **8 Claims**



1. A brush for massaging the cutaneous covering or for brushing the hair, and comprising, at least one assembly of bristles on a perforated support having plural perforations, each bristle being bent to form a loop and having two ends, said loops projecting from a front face of the perforated support, and the two ends of a bristle extending into a perforation of the support and projecting from a rear face of said support, said ends of bristles threaded into the same perforation being fused together to comprise a ball whose section is greater than that of the perforations of the support, to secure the bristles in the perforations.

4,211,218

SPINAL RESTRAINT DEVICE

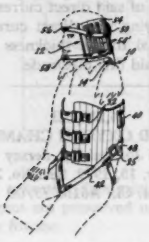
Richard L. Kendrick, 835 Taft St., El Cajon, Calif. 92020

Filed Aug. 14, 1978, Ser. No. 933,460
Int. Cl.[2] A61F *5/04*
U.S. Cl. 128—87 R **8 Claims**

1. A spinal restraint device comprising:
a body member having a front sheet-like layer of flexible material and a rear sheet-like layer of flexible material.
means forming a plurality of longitudinal sleeves between said front sheet-like layer of flexible material and said rear sheet-like layer of flexible material, stiffener members located within said longitudinal sleeves,
said body member having a head support portion, a neck support portion and a back support portion, said head support portion being located adjacent the top of said neck support portion and said back support portion being

located adjacent the bottom of said neck support portion, the longitudinal dimension of said head support portion being greater than the longitudinal dimension of said neck portion but less than the longitudinal dimension of said back support portion.

the lateral dimension of said head support portion being greater than the lateral dimension of said neck support portion but less than the lateral dimension of said back support portion,



said back support portion having wrap-around arm portions that extend laterally a predetermined dimension such that they pass substantially around the patient's torso and their longitudinal dimension is such that they extend substantially between the waist and the chest to provide rib area support, and

a plurality of leg loop straps, each having one of their ends fixedly secured to the rear face of said back support portion, leg loop strap attaching means fixedly secured to the rear face of said back support portion for detachably receiving the free ends of said leg loop straps.

4,211,219

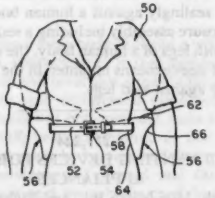
PREVENTIVE MEDICAL BODY BRACE FOR A PERSON LIFTING OR CARRYING WEIGHTS

Frank B. Alvey, 1215 Garvin Pl., Louisville, Ky. 40203

Filed Jan. 30, 1978, Ser. No. 873,379

Int. Cl.[2] **A61F** *5/24;* **B43L** *15/00;* **A45C** *1/04;* **A45F** *3/00*

U.S. Cl. 128—95 **1 Claim**



1. A body brace adapted to be positioned in operative relation with the pelvic girdle of a person and to serve as a functional extension of the pelvic girdle so as to provide a load bearing rest for the elbow of the person and to assist in lifting or carrying heavy weights by increasing the forces transferred through the person's pelvic structure and reducing the forces transferred through the suprapelvic structure, which comprises:

A. a pair of braces, in which:

1. each of said brace members has a profile that is generally of a right triangle, and

2. the body engaging side of each of the brace members is curvilinear to conform to the person's body curviture in the vicinity of the waist, and,

3. the top surface of each of said base members forms a generally wide and horizontal planar surface to serve as a load bearing rest for each elbow of the person;

B. attachment means in the form of wide belt upon which both brace members are slidably mounted so that the brace members may be variably located.

4,211,220

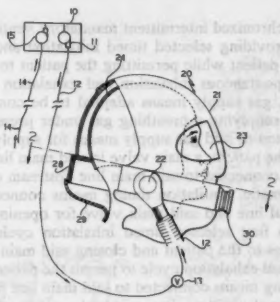
DIVING HELMET ASSEMBLY

Wilbur J. O'Neill, W. Severna Park, Md., assignor to Diver's Exchange, Inc., Harvey, La.

Filed Feb. 2, 1979, Ser. No. 8,930

Int. Cl.[2] **B63C** *11/06*

U.S. Cl. 128—201.27 **10 Claims**



1. In a helmet of the type worn by a diver for underwater breathing, said helmet being characterized as having a shell provided with an internal cavity and access opening thereto through which and into which a portion of a diver's body can be fitted, a breathing gas supply inlet through which a breathing gas can be introduced into the helmet for inspiration into the diver's lungs, and exhaust gas outlet through which gas can be exhausted from the helmet, valve means controlling the flow of gas from said inlet to said outlet, and a flexible diaphragm provided with an opening therethrough which is secured in the access opening to the helmet cavity, the diaphragm adapted to cover and seal the annular space between the body of the diver and the helmet to provide an interface between the water and the diver's breathing gas supply, one side of the diaphragm, when the diver is submerged, being in contact with ambient water while the other is in contact with gas supplied to the inside of the helmet,

the improvement which comprises

a means associated with said flexible diaphragm for sensing changes in the physical position of said diaphragm with respect to said helmet caused by the differential pressure between said ambient water pressure and said helmet gas pressure, and

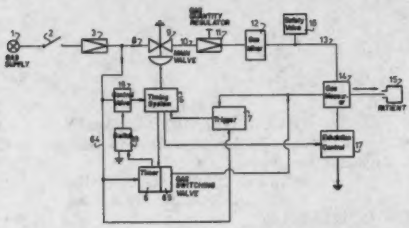
an actuating means responsive to said sensing means for opening and closing said valve means as a function of said pressure differential

whereby the ingress or egress of gas to or from the helmet is regulated, and directly proportioned to the differential pressure sensed by the flexible diaphragm forming said seal.

4,211,221
RESPIRATOR

Erik Schwanbom; Hans-Joachim Hartwig, both of Lübeck, and Detlef Warnow, Gross Grönau, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,036
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746924
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—204.26 10 Claims

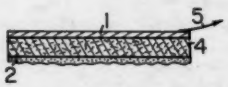


1. A synchronized intermittent mandatory ventilation respirator for providing selected timed inhalation and exhalation cycles to a patient while permitting the patient to carry out a complete spontaneous inhalation and exhalation on its own comprising, gas supply means adapted to be connected to a patient for supplying a breathing gas under pressure, a main line connected to said gas supply means for supplying breathing gas to the patient, a main valve in said main line, a supplemental line connected to said main line upstream of said main valve, automatic ventilation timing means connected to said supplemental line and said main valve for opening said main valve for a first selected timed inhalation cycle to supply breathing gas to the patient and closing said main valve for a selected timed exhalation cycle to permit the patient to exhale, gas measuring means connected to said main line for sensing a patient induced pressure change in said main line formed by a spontaneous inhalation and a spontaneous exhalation of the patient, trigger means connected to said supplemental line, to said gas measuring means and to said timing means for switching said timing means from an exhalation cycle to an inhalation cycle in response to a spontaneous inhalation of the patient, and spontaneous breathing timer means connected to said supplemental line, to said gas measuring means and to said automatic ventilation timing means for blocking the connection between said automatic ventilation timing line and said supplemental means and stopping the cycling of said automatic ventilation timing means in response to a spontaneous inhalation and exhalation of the patient and for supplying breathing air to the patient from said supplemental line for a second selected timed inhalation cycle, and permitting the exhalation of the patient.

4,211,222
IONTOPHORETIC BURN-PROTECTION METHOD

Robert Tapper, 175 Acari Dr., Los Angeles, Calif. 90012

Continuation-in-part of Ser. No. 717,791, Aug. 25, 1976, abandoned. This application Sep. 8, 1978, Ser. No. 940,777
Int. Cl.[2] A61N *1/30*
U.S. Cl. 128—207.21 4 Claims



1. A method of applying electricity to a selected area of a living body while minimizing concomitant iontophoretic burn, said method including the steps of;

applying a first electrode to the skin of said body at said selected area, with an electrically conductive, porous intervenor having a thickness very large in relation to the thickness of said skin, said intervenor interposed between said first electrode and said skin;

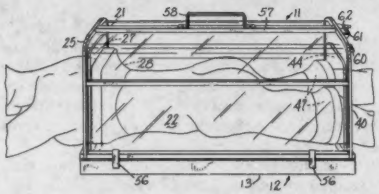
applying a second electrode to said skin spaced from said first electrode; and

applying direct current to said electrodes with a limitation on the amplitude of said direct current multiplied by the duration of applying said direct current, said limitation being proportional to the thickness of said intervenor associated with said first electrode.

4,211,223
PULSED OXYGEN CHAMBER

Rocco W. LoPiano, 26 Journal Sq., Jersey City, N.J. 07306

Filed Apr. 18, 1979, Ser. No. 31,052
Int. Cl.[2] A61M *13/00*
U.S. Cl. 128—207.26 7 Claims



1. A closable chamber for use in gas treatment of areas on a human body between the knees and shoulders, the chamber having a body end and a leg end, comprising separable lower and upper portions and end closure assemblies, the lower portion including a flat tray with body end and leg end walls, the upper portion including body end and leg end walls, said upper portion end walls defining, with the lower portion end walls, an opening at the body end adapted to accommodate the trunk of a human body and an opening at the leg end adapted to accommodate the legs of a human body, the body end closure assembly including a first frame adapted to surround a human body and a sleeve mounted on the first frame and adapted to fit sealingly against a human body in the chamber, the leg end closure assembly including a second frame adapted to surround both legs of a human body, the second frame being provided with sleeve means mounted in the frame and adapted to fit sealingly against said legs.

4,211,224
FILTER VENTING DEVICES FOR OSTOMY APPLIANCES

John S. Kubach, 1406 Milan Rd., and Richard D. Stanley, 164 W. Sprucewood, both of Sandusky, Ohio 44870

Filed Jun. 12, 1979, Ser. No. 47,724
Int. Cl.[3] A61F *5/44*
U.S. Cl. 128—283 26 Claims

1. A filter venting device for use with post-surgical ostomy appliances providing for the continuous and automatic release of odorless gas, with no increase in gas pressure or distension of said ostomy appliance and providing for the deodorization of gaseous, liquid and solid waste materials deposited and collected in said ostomy appliance, comprising:

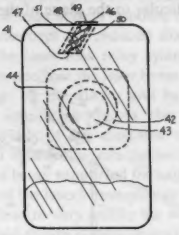
a section of plastic tubing;

fibrous filtering material, packed inside said section of plastic tubing;

a molecular altering deodorizing agent impregnating the strands of said fibrous filtering material;

an air-tight sealing means between said ostomy appliance and the outer surface of said section of plastic tubing,

whereby one orifice, the exterior orifice, of said section of plastic tubing is open to the atmosphere and the exterior of said ostomy appliance and the other orifice, the interior orifice, of said section of plastic tubing is open to the interior of said ostomy appliance; and



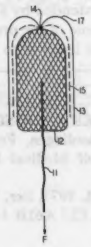
a closure means whereby deodorizing properties of said deodorizing agent are preserved until said filter venting device is ready for use.

4,211,225

TAMPON WITH A COLLAPSIBLE AND INVERTIBLE SHROUD

Dan Sibalis, c/o Link Controls, Inc., 2111 Lakeland Ave., Ronkonkoma, N.Y. 11779

Filed Jul. 19, 1978, Ser. No. 925,938
Int. Cl.[2] A61F *13/20*
U.S. Cl. 128—285 **5 Claims**



1. A tampon having a main body **(12)** and a withdrawal cord **(11)** affixed thereto, characterized in that said tampon further includes a collapsible and invertible shroud **(13)** affixed to said main body opposite said withdrawal cord and a smoothly gliding layer **(15)** included between said main body and said shroud, said layer **(15)** being configured so that the frictional forces between said main body and said layer are less than frictional forces between said shroud and the surrounding body tissue, to cause said main body to slide out from said shroud on withdrawal, progressively inverting and collapsing said shroud.

4,211,226

DISPOSABLE DIAPER WITH FLAP COVERED TAPE FASTENER

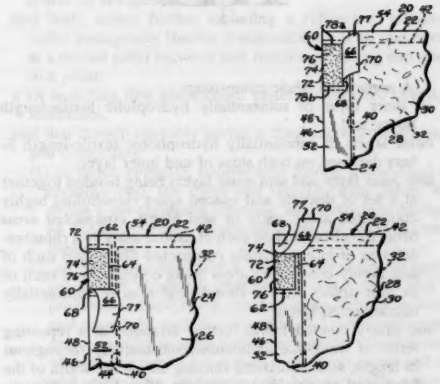
Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 745,273, Nov. 26, 1976, abandoned.
This application Apr. 16, 1979, Ser. No. 30,493
Int. Cl.[3] A61F *13/16*
U.S. Cl. 128—287 **4 Claims**

1. A disposable diaper, comprising:

an absorbent pad assembly having a pair of side edges, a pair of end edges connecting the side edges, a pair of opposed waistline portions adjacent said end edges and a crotch portion therebetween, an absorbent pad having a side edge spaced inwardly from one of the pad assembly side edges, and a backing sheet of thermoplastic material covering a back surface of said pad and having a doubled side margin extending past the side edge of said pad, said side margin comprising first and second facing sections of the backing sheet extending inwardly from a fold line of the side margin defining the one side edge of the pad assembly, with the first and second sections being fused together in one waistline region adjacent one of the pad assembly end edges, the other side margin being allochirally related to said side margin, said side margins in the one waistline region having a first elongated slit means generally aligned with and spaced inwardly from the fold line of said side margin, and a second slit means extending from the first slit means to the fold line of the side margin, with said first and second slit means defining hinged flaps adjacent the side edges of the pad assembly, said flaps each having a release surface formed by the first and second fused sections; and

a pressure-sensitive tape strip secured to a surface of said side margin and covering said flap, said tape strip having adhesive facing toward the flap, with said flap being releasably attached to said adhesive and being peeled from the tape strip to expose the adhesive for use in securing the diaper about an infant.



4. A disposable diaper, comprising:

an absorbent pad assembly having a pair of side edges, a pair of end edges connecting the side edges, a pair of opposed waistline portions adjacent said end edges and a crotch portion therebetween, an absorbent pad having a side edge spaced inwardly from one of the pad assembly side edges, and a backing sheet of thermoplastic material covering a back surface of said pad and having a doubled side margin extending past the side edge of said pad, said side margin comprising first and second facing sections of the backing sheet extending inwardly from a fold line of the side margin defining the one side edge of the pad assembly, with the first and second sections being fused together in one waistline region adjacent one of the pad assembly end edges, the other side margin being allochirally related to said side margin, said side margins in the one waistline region having first and second spaced slit means extending inwardly from the fold line of said side margin, with said first and second slit means defining hinged flaps adjacent the side edges of the pad assembly, said flaps having a release surface formed by the first and second fused sec-

tions and hinging along a line connecting the medial ends of said first and second slit means; and

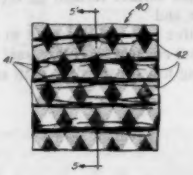
a pressure-sensitive tape strip secured to a surface of said side margin and covering said flap, said tape strip having adhesive facing toward the flap, with said flap being releasably attached to said adhesive and being peeled from the tape strip to expose the adhesive for use in securing the diaper about an infant.

4,211,227

SURGICAL SPONGE MATERIAL

Gary C. Anderson, Framingham; Jon A. Howey, Mansfield, both of Mass., and Harish A. Patel, Crystal Lake, Ill., assignors to The Kendall Company, Boston, Mass.

Filed Jul. 3, 1978, Ser. No. 921,544
Int. Cl.[2] A61F *13/00*
U.S. Cl. 128—296 **9 Claims**



1. A nonwoven fabric comprising:

an inner layer of substantially hydrophilic textile-length fibers; and,

outer layers of substantially hydrophobic textile-length fibers disposed on both sides of said inner layer;

said inner layer and said outer layers being bonded together at a set of discrete and spaced apart rhomboidal highly compacted areas, each of said highly compacted areas being fully bounded on each of its four sides by a rhomboidal area of intermediately compacted fibers, and each of said highly compacted areas being contiguous at each of its four apices with a rhomboidal area of substantially uncompacted fibers;

said thusly bonded fabric further arranged in a repeating series of wave-like undulations substantially throughout its length, said indulations running across the width of the fabric and causing major portions of said intermediately compacted areas and said substantially uncompacted areas, and minor portions of said highly compacted areas, to become more open and porous by opening the interfiber relationships therein without substantially breaking said rhomboidal compacted areas.

4,211,228

MULTIPURPOSE TIBIAL TEMPLATE

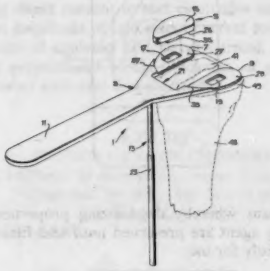
Jean-Marie Cloutier, 12 Aberdeen, Montreal, Quebec, Canada (H3Y 3A4)

Filed Jan. 24, 1979, Ser. No. 6,073
Int. Cl.[2] A61B *17/00*; A61F *1/24*
U.S. Cl. 128—303 R **4 Claims**

1. A multipurpose tibial template for use in the implantation of an adjustable total knee prosthesis including a femoral component and a tibial component comprising a platform member consisting of two spaced apart, elongated sections connected by a bridge section, and two removable and replaceable condylar bearing members lying on and retained by the two elongated sections respectively, said tibial template comprising:

a Y-shaped element comprising a flat handle integrally extended at one end by two flat, elongated prongs, said elongated prongs being symmetrically arranged with respect to a vertical plane passing through the axis of the Y-shaped element perpendicularly to the plane thereof, each prong having substantially the same contour as each of the elongated section of the tibial component to be implanted, respectively, and comprising a central hole extending perpendicularly to the plane of the Y-shaped element;

an alignment rod fixable onto said flat handle near its integrally extended end, said alignment rod being substantially perpendicular to the plane of the Y-shaped element; and



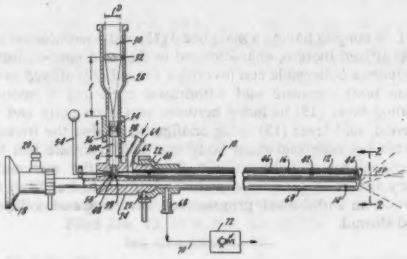
a set of provisional plateaus of different thicknesses for each prong, for determining the thickness of the condylar bearing members to be used in the total knee prosthesis, each provisional plateau comprising an upper concave surface having substantially the same shape and contour as the upper surface of the condylar bearing member of the knee prosthesis to which it corresponds, and a lower flat surface downwardly extended by a central projection insertable in the central hole of the prong corresponding to said plateau to retain the latter onto said prong.

4,211,229

LASER ENDOSCOPE

Helmut Wurster, Oberderdingen, Fed. Rep. of Germany, assignor to Richard Wolf Medical Instruments Corp., Rosemont, Ill.

Filed Dec. 1, 1977, Ser. No. 856,227
Int. Cl.[2] A61B *17/36*
U.S. Cl. 128—303.1 **3 Claims**



1. In an endoscope having an elongated outer sheath which houses an observation telescope for observing internal body tissue at a site where surgery is being performed, said sheath having a distal end and a proximal end, a housing offset from and extending laterally of the axis of the sheath and capable of conducting a laser beam therethrough, said housing containing a first large diameter laser beam collecting lens for receiving and transmitting a laser beam therethrough, said housing also containing a second lens of considerably smaller diameter than said first lens positioned such that it receives the laser beam directly from said collecting lens and being of a shape such that it reduces the diameter of the laser beam to a fraction of its

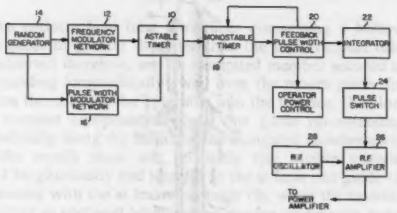
original diameter, a tube in the sheath extending parallel to the telescope, said tube containing a laser lens relay system and a laser objective lens at the distal end of the tube for concentrating the laser beam at a working focal point on the body tissue, said tube being attached to said housing, a deflecting mirror in said housing adjacent the proximal end of said tube and located on the side of the lens relay system opposite the laser objective lens in position to intercept the reduced diameter laser beam and redirect it to the laser lens relay system, said tube and housing being so oriented that the laser beam conducted by the housing will impinge on the mirror and be deflected by the mirror to the laser lens relay system, the deflecting mirror being tiltable universally in any direction whereby the laser beam may be caused to laterally scan the body tissue along any axis, said second lens being supported for axial adjusting movement along the axis of the laser beam relative to said mirror and said first collecting lens to vary axially the working focal point of the laser beam, said sheath at its proximal end being separably fitted to said housing, and means between said sheath and housing to permit coupling and uncoupling of the housing and sheath so that by uncoupling the housing and sheath said housing together with said tube attached thereto may be detached from the sheath and said tube removed along the housing to permit another instrument to be inserted into the sheath.

4,211,230

ELECTROSURGICAL COAGULATION

Stanley N. Woltosz, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,730
Int. Cl.[2] A61N 3/04
U.S. Cl. 128—303.17 **10 Claims**



1. A method for the electrosurgical coagulation of tissue comprising the steps of:

(a) modulating RF energy into a series of pulses having random pulse widths and random time between the start of individual pulses; and

(b) applying the modulated RF energy to tissue so that said tissue is coagulated in response to the modulated RF energy.

8. Apparatus for electrosurgical procedures comprised of:

means for providing a modulated RF signal characterized by having random pulse widths and random times between the start of individual pulses;

means for amplifying said modulated RF signal characterized by having random pulse widths and random times between the start of individual pulses;

means for amplifying said amplified modulated RF signal to a electrosurgically acceptable peak power level;

means for the peak power level amplified modulated RF signal to be in electrical communication with electrosurgical electrodes; and

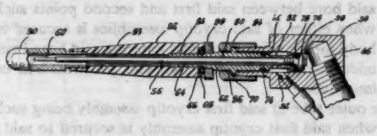
means for controlling the ratio of the average pulse width to the average time between the start of pulses thereby controlling the average power of the peak power level amplified modulated RF signal.

4,211,231

CRYOSURGICAL INSTRUMENT

Ronald P. Rzasa, Fairfield, Conn., assignor to Cryomedics, Inc., Bridgeport, Conn.

Filed May 15, 1978, Ser. No. 906,213
Int. Cl.[2] A61B 17/36; A61F 7/12
U.S. Cl. 128—303.1 **5 Claims**



1. A cryosurgical instrument comprising:

means defining a body having opposing extremities and provided with an elongate bore therein extending through the surface of said body means to define a receiving opening in one extremity of said body means,

said body means including a refrigerant fluid inlet passageway therein communicating with said bore at a first point spaced from said receiving opening and adjacent the opposite extremity of said body means, said refrigerant fluid inlet passageway being adapted to be coupled with a source of refrigerant fluid,

said body means further including a refrigerant effluent outlet passageway therein communicating with said bore at a second point between said receiving opening and said first point;

a kit including first and second, unitary, integrated cryotip assemblies,

said first cryotip assembly having a distal and a proximal end and comprising

(1) an outer, elongate, hollow tube having a distal and a proximal end, the distal end thereof being closed to define a gas expansion chamber, said outer tube having an exhaust opening therein adjacent the proximal end thereof, and

(2) an inner, elongate, hollow tube for supplying refrigerant to said expansion chamber, having a distal and a proximal end and being concentrically disposed within said outer tube such that the distal end of the inner tube opens into said expansion chamber and the proximal end of said inner tube is located adjacent the proximal end of said outer tube, said inner tube being radially spaced from the outer tube to define an annular exhaust channel between said inner and outer tubes communicating with said exhaust opening in said outer tube, said inner tube being secured to said outer tube and having both ends thereof essentially open,

said second cryotip assembly having a distal and a proximal end and comprising

(1) an outer, elongate, hollow tube having a distal and proximal end a refrigerant fluid delivery opening in the distal end thereof, the proximal end of said last named tube being closed, and

(2) an inner, elongate, hollow tube for supplying refrigerant to said delivery opening, having a distal and a proximal end, said last named inner tube being disposed within said last named outer tube such that the distal end of the inner tube opens into said delivery opening and the proximal end of said inner tube is located adjacent the proximal end of said outer tube and having each end thereof essentially open, said last named inner tube being secured to said last named outer tube; the proximal end of each of said cryotip assemblies being sized such that each of said cryotip assemblies may be received within said bore,

manipulable means for selectively securely either of said first and second cryotip assemblies on said body means, said manipulable securing means including a first portion carried by each said first and second cryotip assemblies, and

a second portion carried by said body means adjacent said receiving opening,

the proximal ends of each of said cryotip assemblies being such that when either of said cryotip assemblies is secured to said body means said proximal end of said inner tube extends to a position within said bore between said first and second points, first means for providing a fluid seal between said inner tube and said body means at an area in said bore between said first and second points such that when either of said cryotip assemblies is secured to said body means refrigerant fluid entering said bore from said inlet passage is directed into said proximal end of said inner tube,

the outer tube of said first cryotip assembly being such that when said first cryotip assembly is secured to said body means and said outer tube of said first cryotip assembly extends to a position within said bore between said receiving opening and said first fluid seal means such that said exhaust opening in said outer tube of said first cryotip assembly is in fluid communication with said outlet passage, second means for providing a fluid seal between said outer tube of said first cryotip assembly and said body means at an area in said bore between said second point and said receiving opening such that refrigerant fluid exhausted through said exhaust opening is directed to said outlet passage,

said first and second portions of said manipulable securing means being releasably engagable with each other for releasably securing the corresponding one of said first and second cryotip assemblies on said body means, with said open end of said outer tube of said first cryotip assembly extending into said bore through said receiving opening when said first cryotip assembly is secured to said body means, and with the closed end of said outer tube of said second cryotip assembly extending into said bore through said receiving opening when said second cryotip is secured to said body means,

each of said first and second cryotip assemblies being removable as an integral unit from said body means by operation of said manipulable securing means to permit interchangeably securing either of said first and second cryotip assemblies to said body means.

4,211,232

MUCOUS MEMBRANE CUTTER FOR MUCOGINGIVAL MEMBRANE SURGERY

Werner Mörmann, Zürich, Switzerland; Gerhard Bofinger, Immendingen-Hattingen, and Wilfried Wölfle, Bad Dürrheim, both of Fed. Rep. of Germany, assignors to Aesculap-Werker Aktiengesellschaft, vormals Jetter & Scheerer, Tuttlingen, Fed. Rep. of Germany

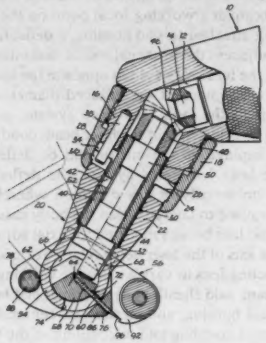
Filed Jan. 31, 1978, Ser. No. 873,935

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1977, 2707523

Int. Cl.[2] A61B *17/322*

U.S. Cl. 128—305.5 **12 Claims**

1. In a mucotome having a handle and a cutting head arranged at one end of the handle, said cutting head including a blade holder carrying a cutting blade with a cutting edge and a cutting shoe for determining the cutting depth of the blade, said cutting head having a guide for the blade holder along which the blade holder is reciprocally movable parallel to the cutting edge of the cutting blade by means of a rotatable drive shaft having an eccentric crank pin engageable in a cross groove in the blade holder, the improvement comprising said blade holder comprising a circular cylindrical blade-holding roller having a longitudinally extending radial slit for receiving the cutting blade, said cutting blade projecting out of said radial slit, said cutting head having a guide slit through which said cutting blade projects, said cutting head being pivotable about the longitudinal axis of the circular cylindrical blade-



holding roller, whereby the cutting blade may be reoriented to cut in the opposite direction.

4,211,233

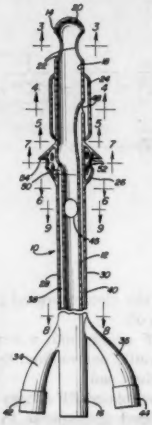
URETHRAL CATHETER

Edward D. Lin, 3663 Grand Ave., Apt. 706, Des Moines, Iowa 50312

Filed Jan. 5, 1978, Ser. No. 867,095

Int. Cl.[2] A61M *25/00*

U.S. Cl. 128—349 B **11 Claims**



1. A urethral catheter for thorough irrigation of a bladder, outward flushing from prostatic urethra and lubrication closely proximal to the tip during both insertion and withdrawal, said catheter comprising an elongated tube having forward and rearward ends and defining an internal longitudinal passage therein and having a tip at its forward end, said tube including a lateral opening formed therein closely spaced rearward of said tip and opening into said passage, an inflatable body supported from and encircling said tube and spaced rearward therealong from said lateral opening, an axially short partially inflatable ring supported from and encircling said tube and closely spaced along said tube rearward of said body, said ring having outwardly facing openings formed therein at points spaced thereabout, said elongated tube including means defining first and second longitudinal passageways extending therealong independent of said passage and opening, at their forward ends, into said body and ring, respectively, said elon-

gated tube intermediate said ring and said inflatable body, including circumferential seal means extending completely thereabout and projecting outwardly therefrom for preventing upward fluid flow therepast, whereby irrigating fluids discharged from said outwardly facing ring openings will be directed downwardly therefrom for eradicating or eliminating ascending infections.

4,211,234

ENDOTRACHEAL TUBE INTRODUCER

Joseph Fisher, 67 Tanjoe Ct., Willowdale, Ontario, Canada

Filed Aug. 24, 1978, Ser. No. 936,536
Int. Cl.² A61M *25/00*
U.S. Cl. 128—200.26 **20 Claims**

1. An endotracheal tube introducer comprising a hollow mouth piece of greater diameter than the endotracheal tube being inserted thereinto, and an elongated member secured to and extending longitudinally away from the mouth piece, for insertion thereof past the epiglottis into the trachea, the elongated member comprising at least one guide rib extending longitudinally along the length of the elongated member away from the mouth piece and relatively thin pliable material pleated longitudinally and secured to the at least one guide rib and forming with the at least one guide rib, when the material is unfolded an enclosed tubular structure for guiding the endotracheal tube into the trachea.

4,211,235

PROGRAMMER FOR IMPLANTED PACER

John W. Keller, Jr., Miami, Fla.; Dennis Digby, Brooklyn Park, and Alan Coombes, New Hope, both of Minn., assignors to Biotronik Mess- und Therapiegerate GmbH & Co., Berlin, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 917,139
Claims priority, application United Kingdom, Aug. 19, 1977, 34912/77
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 PG **5 Claims**

1. An external programmer for generating an output signal comprising a fixed number of pulses each having a preselected duration, said output signal being supplied to an implanted, programmable body function apparatus for varying given operational functions thereof, comprising:

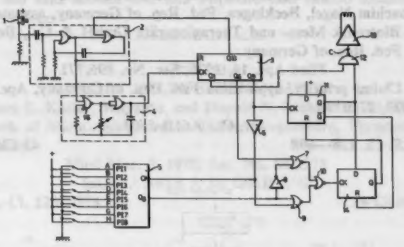
register means for receiving and storing a fixed number of logic bits, each of said logic bits determining the duration of one of the fixed number of pulses in said output signal;

pulse generation means for generating a pulse signal at a predetermined frequency;

counter means coupled to said pulse generation means having a plurality of pulse outputs of different fixed durations, the duration of one of said pulse outputs being less than that of the remaining pulse outputs, the durations of the remaining pulse outputs corresponding to preselected durations of the pulses comprising said output signal as determined by said logic bits;

output means for transmitting said output signal to said implanted apparatus;

control means coupling said counter means to said output



means for periodically enabling said output means to transmit the fixed number of pulses in said output signal at a rate corresponding to the duration of said one pulse output of said counter means; and

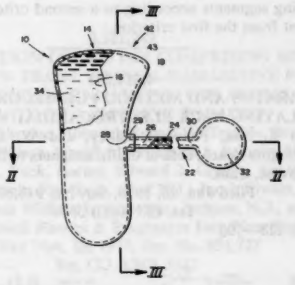
logic means coupled to said counter means and said register means for disabling said output means after each periodic enabling thereof, the duration of each pulse in said output signal being determined by said remaining pulse outputs from said counter means.

4,211,236

ORTHOPEDIC CUSHION AND METHOD FOR FITTING THEREOF

Martin S. Krinsky, 545 Saratoga Ave., Santa Clara, Calif. 95050

Filed Nov. 24, 1978, Ser. No. 963,906
Int. Cl.² A61F *5/14*
U.S. Cl. 128—594 **17 Claims**



1. An orthopedic cushion, useful for fitting to a user's foot or against other portions of a user's body, comprising:

a unitary structure including:

a flexible envelope, the envelope defining an interior volume;

an elongated member outwardly extending form the envelope, the elongated member including a narrow passageway communicating at one end with the envelope interior volume; and

a diverticulum, the diverticulum opening off of the passageway at the passageway other end and being spaced outward of the flexible envelope and away from that portion of the envelope against which the user's foot or other portions of the user's body will bear, the divertic-

ulum, the passageway, and the envelope volume all under partial vacuum; and

a non-set and flowable, highly viscous material, the viscous material of a predetermined amount overfilling the envelope volume and within the passageway.

4,211,237

METHOD AND APPARATUS FOR IDENTIFYING RECURRING SIGNAL PATTERNS

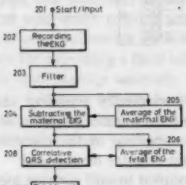
Joachim Nagel, Beckingen, Fed. Rep. of Germany, assignor to Biotronik Mess- und Therapiegeräte GmbH & Co., Berlin, Fed. Rep. of Germany

Filed Apr. 14, 1978, Ser. No. 896,771

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1977, 2716739

Int. Cl.² A61B 5/04

U.S. Cl. 128—698 **43 Claims**


201 Start/input
202 Recording the EKG
203 Filter
204 Subtracting the maternal EKG
205 Average of the maternal EKG
206 Average of the fetal EKG
208 Correlative QRS detection
207 Fetal heart frequency

1. A method for identifying a periodically recurring signal pattern contained in a signal mixture which also contains interference components, comprising: detecting the amplitude pattern of a segment of the signal mixture according to a first criterion; storing the detected pattern in a memory, where the stored pattern constitutes a sample; continuously matching the amplitude pattern of the stored sample to subsequently occurring signal mixture segments having a similar amplitude pattern; and determining the degree of coincidence between the amplitude pattern of subsequently occurring signal segments and that of the sample in order to identify such subsequently occurring segments according to a second criterion, which is different from the first criterion.

4,211,238

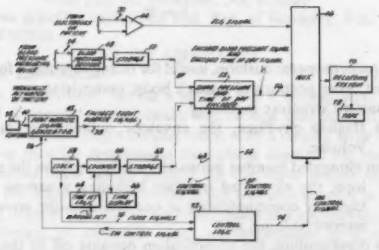
APPARATUS AND METHOD FOR RECORDING AND PLAYING BACK ELECTROCARDIAL SIGNALS

Stephen K. Shu, Fountain Valley, and W. David Squires, Huntington Beach, both of Calif., assignors to Del Mar Avionics, Irvine, Calif.

Filed Jun. 23, 1978, Ser. No. 918,698

Int. Cl.² A61B 5/04

U.S. Cl. 128—700 **42 Claims**



1. A tape recorder for use in ambulatory monitoring of a cardiac patient, said tape recorder having recording head means for recording on a single track in a tape an ECG signal obtained continuously from a patient, and recording on the same single track several intermittent signals including blood pressure signal received intermittently from a portable blood pressure measuring device affixed to the patient, an event marker signal generated in response to actuation of an event marker control from time to time by the patient, and a periodic time of day signal, said tape recorder comprising in combination:

recording means operatively associated with the tape and responsive to an applied electrical signal for recording the applied electrical signal on a single track in the magnetic tape;

multiplexer means connected to said recording means and providing to said recording means the applied electrical signal to be recorded, the latter including an ECG signal and an intermittent signal selected by said multiplexer means under control of an applied MX control signal from a set of signals including an encoded time of day signal, an encoded blood pressure signal, and an encoded event marker signal;

time of day encoder means for generating and storing an encoded time of day signal representing the time of day, said time of day encoder means connected to said multiplexer means and providing said encoded time of day signal to said multiplexer means under control of an applied T control signal;

blood pressure encoder means to which the blood pressure signals received intermittently from the blood pressure measuring device are applied for converting the blood pressure signals into a form suitable for storage, for storing the converted blood pressure signals, and in response to an applied BP control signal to read out the stored converted blood pressure signals and to encode them into a predetermined format, said blood pressure encoder means connected to said multiplexer means and providing said encoded blood pressure signals to said multiplexer means;

event marker signal generator means for generating an encoded event marker signal having a predetermined format in response to an EM control signal applied after the patient has actuated the event marker control, said event marker signal generator means connected to said multiplexer means and providing said encoded event marker signal to said multiplexer means;

control logic means connected to said time of day encoder means for generating and providing to said time of day encoder means said applied T control signals, connected to said blood pressure encoder means for generating and providing thereto said applied blood pressure control signals, connected to said event marker signal generator means for generating and providing thereto said applied EM control signal, and connected to said multiplexer means and generating and providing to said multiplexer means said applied MX control signal for controlling the selection by said multiplexer means from said set of signals of an intermittent signal to be recorded.

4,211,239

NEONATAL OXYGEN CONSUMPTION MONITOR

Daniel B. Raemer; Dietrich K. Gehmlich; Dwayne R. Westenskow, all of Salt Lake City, Utah, and Curtis C. Johnson, deceased, late of Salt Lake City, Utah (by Charles W. Whitehead, Wilma W. Johnson, personal representatives), assignors to University of Utah, Salt Lake City, Utah

Filed May 3, 1978, Ser. No. 902,471

Int. Cl.² A61H 1/00; A61M 16/00

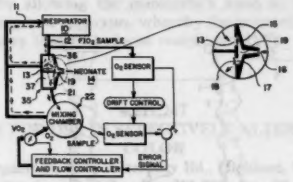
U.S. Cl. 128—716 **12 Claims**

1. An oxygen consumption monitor system suitable for use in measuring oxygen uptake in neonates, comprising:

(a) a respirator for supplying a high volume, controlled flow of oxygen;

(b) a flow duct for conducting said oxygen from the respirator, said flow duct having a primary flow line and a secondary outlet communicating with said primary flow line;

(c) a respiration duct having one end adapted for communication with the lungs of said neonate;
(d) an expiration duct for receiving expired gas from the neonate;
(e) an inlet and outlet check valve combination coupled jointly on one side of said valves to said respiration duct and on the other side respectively to said secondary outlet and said expiration duct, said valve combination coupling providing an intermittent inspiration passageway from



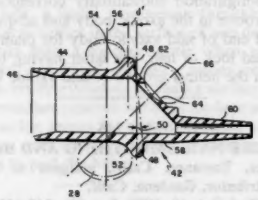
said primary flow line, through said inlet check valve and into the respiration duct and lung region, and an exiration passageway through said respiration duct and outlet check valve to said expiration duct, each of said inlet and outlet valves being biased in a closed position, the valve combination coupling having minimal deadspace; and
(f) means coupled to said primary flow line and said expiration duct for comparing the oxygen concentration of inspired gas versus that of corresponding expired gas for a determination of the amount of oxygen consumed.

4,211,240

INSPIRATORY FORCE ADAPTOR

Stephen F. Gallagher, 23 Eisenhower Dr., Norton, Mass. 02766

Filed Oct. 10, 1978, Ser. No. 949,864
Int. Cl.² A61B *19/00*
U.S. Cl. 128—725 **3 Claims**



1. An inspiratory force adapter comprising:
(a) an elongated hollow tubular body member having first and second ends and an air passage extending therethrough adapted to be grasped between the thumb and a finger of an operator;
(b) said tubular body being provided with a finger port adapted to be closed by an index finger of said operator; said finger port constituting an opening from said air passage to the outside atmosphere;
(c) the exterior of said tubular body member being provided with opposing finger positioning surfaces, the first of said surfaces being a thumb locating surface adapted to be engaged by the side of the thumb of said operator and the second of said surfaces being a finger locating surface adapted to be engaged by the side of said first named finger; the perpendicular central axes of said surfaces being aligned, with respect to each other and being transverse to the longitudinal axis of said body member, a ridge encircling said body member and abutting said surfaces, said surfaces being located along the peripheral surface of said body member between said first end and said ridge, said ridge being disposed with its transverse plane being oriented at an angle with respect to said perpendicular central axes of said surfaces, such that the difference between the distance from the ridge to said central axis of the thumb locating surface and the distance from the ridge to said central axis of said finger locating surface is substantially one tenth of an inch, said finger port being located on said tubular body member between said ridge and said second end and opposite said thumb locating surface.

4,211,241

HEART VALVE SIZING GAUGE

Robert L. Kaster, Wayzata, and Donald N. Mehl, Minnetonka, both of Minn., assignors to Kastec Corporation, Plymouth, Minn.

Filed Mar. 3, 1978, Ser. No. 882,971
Int. Cl.² A61B *5/10*; G01B *5/12*
U.S. Cl. 128—774 **14 Claims**

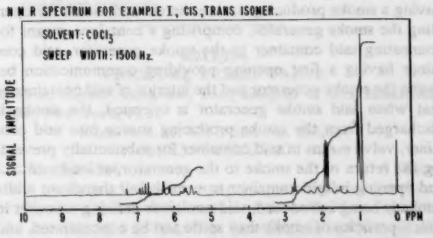
1. A heart valve sizing gauge comprising a slightly curved handle, a right circular cylindrical sizing ring having a smooth continuous exterior wall of a width, as measured parallel to the ring axis, substantially greater than the wall thickness and a hollow interior, and connector means connecting the handle and the sizing ring, wherein the connector means is connected rearwardly to the handle and includes exterior surface means diverging forwardly and smoothly, unbrokenly blending into the exterior surface of the sizing ring to facilitate removal of the sizing gauge ring from the heart orifice, and so constructed and arranged for providing direct visual observation through the interior of the sizing ring of heart tissue beyond the sizing ring.

4,211,242

COMPOSITION OF MATTER COMPRISING MORE THAN 50% TRANS, TRANS-Δ-DAMASCONE FOR AUGMENTING OR ENHANCING THE AROMA AND TASTE OF A SMOKING TOBACCO

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Richard A. Wilson, Westfield; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Edward J. Granda, Englishtown; Joacquin Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and William L. Schreiber, Jackson, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Nov. 15, 1977, Ser. No. 851,727
Int. Cl.² A24B *3/12*
U.S. Cl. 131—17 R **5 Claims**



3. A smoking tobacco product comprising (i) smoking tobacco and (ii) intimately mixed with said smoking tobacco a

composition suitable for augmenting or enhancing the organoleptic properties of said smoking tobacco which composition consists essentially of 80 to 85 percent of a synthetically produced trans, trans-Δ-damascone and 20–15 percent of a synthetically produced cis, trans-Δ-damascone.

4,211,243

PROCESS FOR PRODUCING EXPANDED TOBACCO STEMS

Masayuki Ohno, Hiratsuka; Kazuhiko Akutagawa, Hadano; Hiroo Inui, Tokyo; Yoshihiko Nishizawa; Naoshi Tsukada, both of Noda, and Takeshi Akao, Abiko, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda and The Japan Tobacco & Salt Public Corporation, Tokyo, both of, Japan

Filed Feb. 21, 1978, Ser. No. 880,008

Claims priority, application Japan, Feb. 22, 1977, 52-17709

Int. Cl.[2] A24B *3/18*

U.S. Cl. 131—140 P **4 Claims**

1. A process for producing expanded tobacco stems, which comprises heating under a pressurized atmosphere in the presence of superheated steam tobacco stems separated from tobacco leaves at a temperature of 190° to 260° C. and a pressure of 3 to 10 kg/cm^2 (gage) for 1 to 30 seconds and suddenly bringing the pressure to atmospheric pressure to effect expansion of the stems.

4,211,244

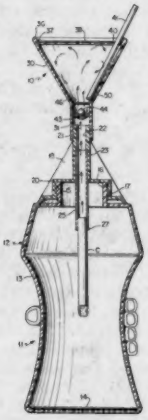
SMOKING DEVICE

Shane Williams, Rte. 1, Box 23, Muldrow, Okla. 74948

Filed Nov. 20, 1978, Ser. No. 962,347

Int. Cl.[2] A24F *1/04, 47/00*

U.S. Cl. 131—194 **5 Claims**



1. A smoking apparatus for use with a smoke generator having a smoke producing source therein and means for operating the smoke generator, comprising a container, means for connecting said container to the smoke generator, said container having a first opening providing communication between the smoke generator and the interior of said container so that when said smoke generator is operated, the smoke is discharged from the smoke producing source into said container, valve means in said container for substantially preventing the return of the smoke to the generator, at least one second opening in said container to vent the air therefrom while smoke is being introduced, said container defining a pocket in which particles of smoke may settle and be concentrated, and means for selectively removing the concentrated smoke particles from said container.

4,211,245

HAIR-WAVING DEVICE

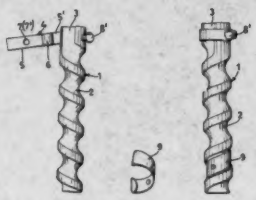
Aldo Coppola, and Antonio Coppola, both of Milan, Italy, assignors to Coiffeurs i Coppola, di Aldo e Antonio Coppola, s.n.c., Milan, Italy

Filed Oct. 5, 1978, Ser. No. 948,741

Claims priority, application Italy, Oct. 7, 1977, 22442/77[U]

Int. Cl.[3] A45D *2/00*

U.S. Cl. 132—40 **7 Claims**



1. A hair-waving device comprising, in combination:

(a) an axonic body having a proximal end and a distal end;

(b) an uninterrupted helical groove formed on the surface of said axonic body, starting from said distal end and terminating near said proximal end;

(c) a gutter-like groove arranged on the surface of the proximal end of said axonic body in an axial direction and as an upward extension of said helical groove;

(d) two trunnion-like, diametrically opposite knob-topped pins, each on either side of said gutter-like groove and extending outwardly from the axonic body;

(e) a strap of resiliently yielding material having end holes for inserting the knob-like ends of said trunnion-like pins therethrough, and a ridge matching the outline of said gutter-like groove for clamping the proximal end of a lock of hair therebetween, and,

(f) a short helical clip of a snappingly resilient material having a configuration substantially corresponding to the helical groove in the axonic body and adapted to engage the distal end of said axonic body for clamping the free end of said lock of hair, the latter having been helically wound in the helical groove of said axonic body.

4,211,246

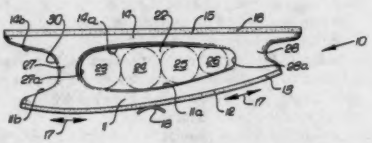
MANICURE NAIL SMOOTHING AND BUFFING

Yosh Hokama, Torrance, Calif., assignor to International Beauty Distributor, Gardena, Calif.

Filed Oct. 10, 1978, Ser. No. 949,625

Int. Cl.[2] A45D *29/04*

U.S. Cl. 132—76.4 **1 Claim**



1. In a manicure nail processing apparatus, the combination comprising:

(a) a lower endwise elongated support to carry a first fingernail processing element at the lower side thereof,

(b) an upper endwise elongated support above the lower support to carry a second fingernail processing element on the upper side thereof,

(c) two horizontally spaced posts extending vertically between said two supports and interconnecting said supports and holding them in vertically spaced relation, thereby to

provide a space vertically between the supports and horizontally elongated between the two posts to closely receive a manicurist's fingers whereby the lower support may then be endwise reciprocated over a fingernail, said two supports extending continuously between said posts,

(d) one of said posts and portions of said two supports defining an endwise openly facing recessed shoulder to be gripped by a manicurist's thumb when the manicurist's fingers received in said space are folded to invert said upper support into position below the lower support thereby allowing the manicurist's hand to form a fist gripping said apparatus, whereby the inverted upper support may then be endwise reciprocated over said fingernail.

4,211,247

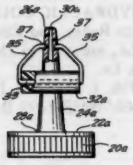
DEVICES FOR USE IN SELECTIVELY ALTERING HAIR COLOR

Shila Morganroth, 1225 Waterbury Rd., Highland, Mich. 48031

Continuation-in-part of Ser. No. 481,695, Jun. 25, 1974. This application Jul. 2, 1975, Ser. No. 592,764

Int. Cl.[2] A45D *40/26*

U.S. Cl. 132—88.7 **29 Claims**



1. A device for use in selectively altering hair color comprising closure means adapted to be removably secured to a squeeze bottle to close an open end thereof, an elongated slender hair parting means secured at its base to and extending upwardly from said closure means having a frustoconical tip at the upper end with a rounded smooth end adapted to penetrate and part the hair, a liquid passageway through said device having a discharge orifice in the surface of said device adapted to deliver liquid from a squeeze bottle when said device is secured thereto, and liquid spreading means on said device having a transversely extending spreading surface spaced from and at an intermediate position between the base and upper end of said hair parting means for spreading liquid into hair after discharge from said orifice without preventing use of said parting means to part the hair.

4,211,248

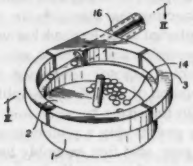
DISPENSING MACHINE, IN PARTICULAR FOR COINS

Guy Lafon, 41 Chemin des Semailles, Grand-Lancy, Geneva, Switzerland

Filed Jun. 24, 1975, Ser. No. 573,137

Int. Cl.[2] G07D *9/06*

U.S. Cl. 133—1 R **9 Claims**



1. In a dispensing machine for coins and the like, comprising a coin receiving vat rotatable about its vertically directed axis of revolution, a revolvable, inclined, circular plate positioned inside said vat and revolvable about an axis which lies at an acute angle to said axis of revolution of said vat, and a rim extending along at least a portion of the periphery of said vat adapted to draw the coins with it in its rotatory motion to eject said coins through a side opening, according to a common direction, the improvement wherein the inner wall of said vat appear from bottom to top as including two portions, to wit:

a first portion in the shape of a frustum of cone, which flares upwards and a cylindrical portion having the same diameter as the greater base of said frustum of cone,

while the center of the upper surface of said plate lies in the plane of said greater base, at a small distance from said axis of revolution of said vat towards the highest point of said inclined plate, said distance being a function of the dip of said plate, so that the clearance between the outer diameter of said plate and said inner wall of said vat is substantially uniform.

4,211,249

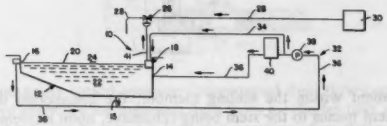
LIQUID LEVEL CONTROL SYSTEM

George B. Richards, Lake Forest, Ill., assignor to Fluid Device Corporation, Highland Park, Ill.

Filed Sep. 7, 1978, Ser. No. 940,067

Int. Cl.[2] F16K *21/18*

U.S. Cl. 137—393 **19 Claims**



1. A liquid level control system for use with a swimming pool or the like, comprising:

a pool reservoir;

outlet means from the pool reservoir;

inlet means to the pool reservoir;

water circulation means between said outlet means and said inlet means;

means including a fluid amplifier positioned relative to said pool reservoir in communication with said water circulation means for sensing an interface between liquid and gas at the surface level of water in said pool reservoir, said interface sensing means producing a fluid pressure signal when said interface falls below a predetermined water level;

means including a fluid valve which is responsive to said signal produced by said interface sensing means, said signal responsive means being normally closed in an inoperative position and movable to an operative open position when said fluid pressure signal is produced by said interface sensing means; and

means associated with said signal responsive means for supplying water from an external water supply to said reservoir when said signal responsive means is moved to said operative position.

4,211,250

PRESSURE RELIEF VALVE

David E. Snyder, Longview, Tex., assignor to U.S. Industries, Inc., New York, N.Y.

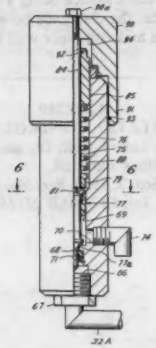
Filed Nov. 21, 1977, Ser. No. 853,514

Int. Cl.[2] F16K *21/10*

U.S. Cl. 137—514 **6 Claims**

1. A pressure relief valve, comprising a body having a chamber therein with an inlet thereto and an outlet therefrom, the inlet comprising a passageway including an annular sealing member of resilient sealing material having a sealing lip about its inner diameter adjacent its outer end, a valve element slid-

ably reciprocable within the sealing member between a closed position in which its end extends through and beyond the lip of the sealing member so as to contain fluid from a source to which the inlet is connected and an open position in which its lower end is removed from within the annular sealing member so as to permit said fluid from the inlet to be exhausted through the outlet, a stem on the valve element guidably reciprocable within the body, a spring surrounding the stem and contained at one end, and detent means providing a connection between the stem and the opposite end of the spring to maintain the spring in a compressed condition and thereby oppose opening movement of the valve element due to fluid acting on the valve



element within the sealing member, the connection of said detent means to the stem being releasable, upon movement of the valve element toward its open position but prior to withdrawal of its end from the lip of the sealing member, whereby further opening movement of said element is unopposed by the spring, said detent means automatically reconnecting the stem to the sleeve upon movement of the stem in a direction to return the valve element to its closed position, said spring and detent means being enclosed with said body, and said stem having a part thereon movable into engagement with the detent means, following the release of its connection to the spring, so that the spring absorbs shock of the opening movement of the valve element.

4,211,251

AUTOMATIC PURGING SYSTEM

Raymond E. Rickert, Terre Haute, and Billy J. Swalls, Lewis, both of Ind., assignors to Templeton Coal Co., Inc., Terra Haute, Ind.

Division of Ser. No. 899,412, Apr. 24, 1978, Pat. No. 4,169,225. This application Dec. 13, 1978, Ser. No. 969,012

Int. Cl.[2] **E03B** *5/00;* **H05B** *3/58*

U.S. Cl. 137—565 **4 Claims**

1. A fluidic control system for purging an enclosure for electrical equipment and the like comprising:

a purging gas inlet,

a purging gas outlet adapted to be connected to the enclosure,

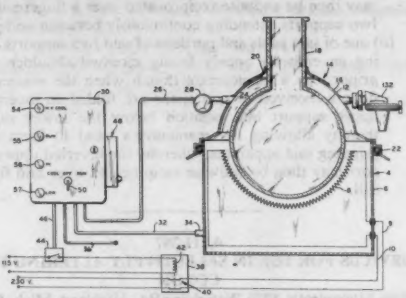
condition sensing means for sensing a condition within the enclosure and providing a first control pressure at a control inlet when the sensed condition has exceeded a predetermined limit,

a control pressure outlet,

first fluidic logic means responsive to said first control pressure for providing a deactivating control pressure at said control pressure outlet,

second fluidic means for flowing a predetermined volume of said purging gas from said purging gas inlet through said purging purging gas outlet in response to said first control signal,

third fluidic logic means for continuously providing low pressure purging gas from purging gas inlet at said purg-



ing gas outlet at least in the absence of said first control pressure at said control inlet.

4,211,252

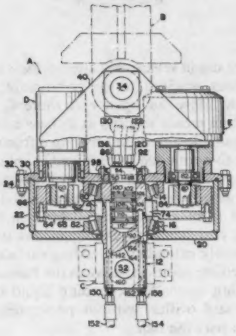
HYDRAULIC COUPLER

Mario Pezzini, Baton Rouge, and Elmer P. Myers, Greenwell Springs, both of La., assignors to The Yaun-Williams Bucket Co., Baton Rouge, La.

Filed Feb. 1, 1978, Ser. No. 874,102

Int. Cl.[2] **B25B** *1/00;* **B66C** *1/00*

U.S. Cl. 137—580 **6 Claims**



1. A coupler for connecting two members for rotation through three hundred and sixty degrees (360°) and having conduits therein for conducting hydraulic fluid from one to the other, said coupler comprising: a first assembly including spaced parallel plate-like parts; a second assembly having a cylindrical part extending through an aperture in one of said plate-like parts of said first assembly with one end thereof adjacent to another of said plate-like parts; tapered roller bearings located in the space between said plate-like parts of said first assembly connecting said assembly for rotation relative to one another; an internal gear located between said plate-like parts of said first assembly and keyed to said cylindrical part of said second assembly; a motor connected to said another of said plate-like member of said first assembly with its driven shaft extending into the space between said plate-like parts of said first assembly and having a pinion gear thereon in mesh with said internal gear; said first assembly having a cylindrical manifold part extending downwardly from said another of said plate-like member of said first assembly into a centrally located cylindrical aperture in the end of said cylindrical part of said second assembly adjacent to said another of said plate-like member of said first assembly; said cylindrical manifold part

having a plurality of axially spaced circumferential grooves in its outer surface with hydraulic fluid seals in alternate grooves; conduits in the form of apertures in said manifold part of said first assembly each having one end adapted for the connection of a flexible conduit and the other end communicating with different of said grooves in said manifold part; and conduits in the form of apertures in said cylindrical part of said second assembly each having one end adapted for the connection of a flexible conduit and the other end communicating with different of said grooves in said manifold part of said first assembly with which said conduits in said manifold part of said first assembly communicates.

4,211,253

COUPLING DEVICE

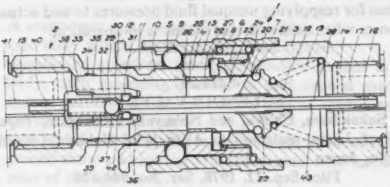
Kjell R. Ekman, Zug, Switzerland, assignor to Ekman Engineering AG, Zug, Switzerland

Continuation of Ser. No. 688,795, May 21, 1976, abandoned. This application Dec. 8, 1977, Ser. No. 858,875

Claims priority, application Switzerland, May 30, 1975, 62018/75

Int. Cl.[2] F16L *37/28*

U.S. Cl. 137—594 **11 Claims**



1. A quick-connect coupling device for supplying a plurality of separate fluids from respective pressurized fluid sources to separate output conduits for said fluids without admixing of the fluids in the coupling device, said coupling device comprising:

a first coupling part having first and second axial fluid flow passages extending therethrough,

a second coupling part also having first and second axial fluid flow passages extending therethrough,

said first and second coupling parts each having on a respective first end thereof means to permit the detechable coupling of said parts with their respective first and second fluid flow passages aligned to permit fluid flow therefrom,

means responsive to the attainment by said first and second coupling parts of a first predetermined coupling relationship for completing a continuous fluid flow path only through the respective first fluid flow passages of said first and second parts,

said responsive means being also responsive to the attainment by said first and second parts of a second predetermined coupling relationship to provide a continuous fluid flow path through the respective second fluid flow passages of said parts,

wherein said responsive means comprises an elongated tubular member supported within said first coupling part, and a hollow holder member supported within said second coupling part, said holder surrounding and supporting a hollow cylinder-shaped lining member which, in turn, supports a first valve member and a first spring member such that the first valve member is pressed by said first spring against a seat formed at an end of said lining member, a sealing ring compressed between an inwardly protruding edge of said holder and said lining member, a recess formed in an outer edge of said elongated tubular member, whereby said lining member positions said sealing ring and also provides the seat against which the first valve member is biased by the first spring.

4,211,254

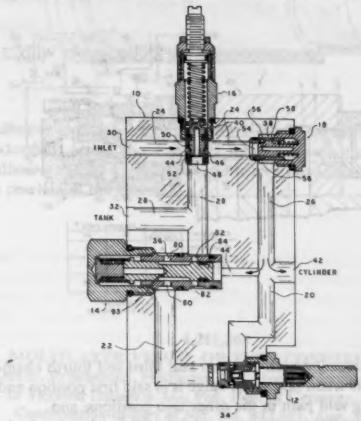
NORMALLY CLOSED PRESSURE COMPENSATED FLOW CONTROL VALVE

Elton E. Dyal, Wood Dale, Ill., assignor to Modular Controls Corporation, Villa Park, Ill.

Filed Oct. 30, 1978, Ser. No. 955,938

Int. Cl.[2] F15B *13/04*

U.S. Cl. 137—596.12 **13 Claims**



1. A normally closed pressure compensated fluid flow control valve assembly for metering fluid from a cylinder port at a desired rate for lowering a load at a corresponding desired rate said valve assembly comprising: a valve means coupled to the cylinder port and selectively actuable for permitting fluid to flow from the cylinder; a normally closed pressure compensating valve means coupled to said valve means and disposed downstream from said valve means with respect to the fluid flow from the cylinder for maintaining a desired fluid flow pressure and a desired fluid flow rate, said normally closed pressure compensating valve means including a control input adapted to be directly coupled to the cylinder through said cylinder port for continuously sensing the fluid pressure within the cylinder; and means between said valve means and said normally closed pressure compensating valve means for restricting the rate of fluid flow from said valve means to said normally closed pressure compensating valve means; said normally closed pressure compensating valve means being arranged to gradually open upon the actuation of said valve means for gradually increasing the fluid flow rate to a desired fluid flow level and to maintain the desired fluid flow rate thereafter responsive to the cylinder pressure sensed by said control input.

4,211,255

SLIDE VALVE

Jerry D. Wisbey, and Kirby L. Stone, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 14, 1978, Ser. No. 969,483

Int. Cl.[3] F16K *31/124*

U.S. Cl. 137—625.48 **14 Claims**

1. A reciprocating slide valve having a spool valve member that is slidably movable among at least three positions (first, intermediate, and injection, respectively) and comprising

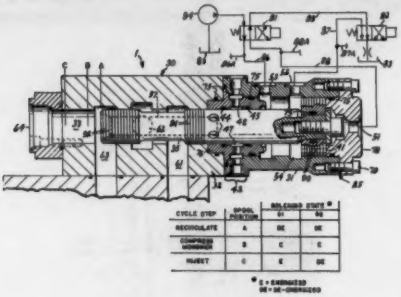
an elongated body having therein a bore constituting a valve chamber;

a spool valve slidably mounted in said bore for reciprocating among said three positions;

drive means to move and position said spool valve at selected ones of said positions;

first, second, third, and fourth valve chamber ports through

said body and arranged serially in the walls of said chamber progressing from one end to the other of said chamber; first and second lands spaced by a groove on said spool valve; said groove and first and second chamber ports being axially located and sized to connect said first and second chamber ports when said spool valve is in said intermediate position and to be in communication with at least said second chamber port when said spool valve is in said injection position; said second land establishing a



communication path between said third and fourth chamber ports when said spool valve is in said first position and blocking said path in the other two positions; and

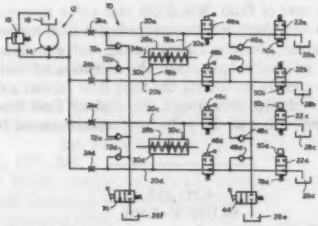
axially extending passage means in said spool valve body extending between said lands for establishing communication when said spool valve is positioned at said injection position between said fourth chamber port and a predetermined one of said other chamber ports but to block the last said communication at the other position.

4,211,256

CIRCULATING FLOW HYDRAULIC PILOT SYSTEM

Charles R. Sturtz, Jr., St. Joseph, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 14, 1977, Ser. No. 860,360
Int. Cl.[2] F15B *13/043*
U.S. Cl. 137—625.64 **11 Claims**



1. A hydraulic system of the type which includes a directional control valve having a stand-by position and an operating position, source means for supplying pressurized fluid, means for limiting the maximum fluid pressure of said source means, sump means for receiving fluid, and a pilot hydraulic system for actuating said directional control valve to said operating position, in which said pilot system comprises:

a first conduit receiving pressurized fluid from said source means and establishing a first fluid flow path to said sump means;

a second conduit receiving pressurized fluid from said source means and establishing a second fluid flow path to said sump means;

first and second fluid restrictors being interposed into respective ones of said first and second fluid flow paths;

first and second pilot valves, each having a free-flow and a flow blocking position, and each being interposed into respective ones of said fluid flow paths in series flow relationship with respective ones of said fluid restrictors;

a fluid actuator, operatively connected to said directional control valve, having a first actuator port that communicates with said first fluid flow path intermediate of said first fluid restrictor and said first pilot valve, and having a second actuator port that communicates with said second fluid flow path intermediate of said second fluid restrictor and said second pilot valve, said actuator ports being subject to substantially equal fluid pressures when said pilot valves are in said free-flow position;

bias means for resiliently urging said directional control valve to said stand-by position;

operating means for moving one of said pilot valves from said free-flow position to said flow blocking position so that unequal fluid pressures are applied to said actuator ports;

override means for reestablishing substantially equal fluid pressures applied to said actuator ports when said one pilot valve is in the blocking position; and

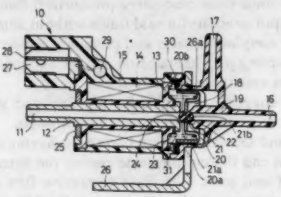
means for reapplying unequal fluid pressures to said actuator ports when said override means is in operation.

4,211,257

SOLENOID VALVE

Naoji Sakakibara, Chiryu, and Nobuyuki Hashimoto, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 22, 1978, Ser. No. 944,674
Claims priority, application Japan, Oct. 26, 1977, 52-128273
Int. Cl.[2] F16K *31/06*
U.S. Cl. 137—625.65 **2 Claims**



1. A solenoid operated fluid control valve comprising an armature assembly, an electromagnetic assembly, valve chamber, fluid passageways and magnetic path assembly, said armature assembly including a platelike magnetic valve member having an opening therethrough reciprocally movable in said valve chamber, a seal element of resilient material loosely retained by the valve member for pivotal movement only and a spring urging the valve member in a first direction of its reciprocal movement in said valve chamber, said electromagnet assembly including a coil and a magnetic core fixed with respect to the coil and having a tapered valve seat at its end which faces toward the opening in said valve member, said seal element having at least one tapered projection, which extends toward the tapered valve seat, said seal element having an annular recess having a bottom portion spaced from said opening and outwardly diverging side walls in constant engagement with the peripheral edges of said opening at each end of the opening respectively thereby allowing said seal element to pivot in said opening, one of said fluid passageways communicating with said tapered valve seat, the other of said fluid passageways communicating with the valve chamber, said magnetic path assembly including magnetic members which form a magnetic flux path from an outer end of said magnetic core to the vicinity of the edge of said valve member.

4,211,258

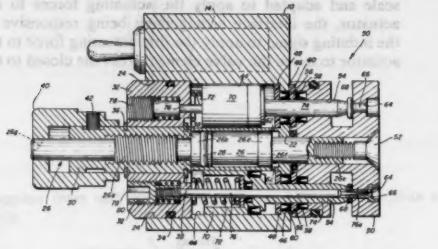
SPRAY DAMPENING SYSTEM FOR OFFSET PRINTING WITH PAGE CONTROL ASSEMBLY

Thomas G. Switall, Chicago, Ill., assignor to Ryco Graphic Manufacturing, Inc., Wheeling, Ill.

Division of Ser. No. 794,257, May 5, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,866

Int. Cl.[2] F16K *31/143;* B05B *1/14*

U.S. Cl. 137—862 19 Claims



1. A compound valve assembly, comprising:

a solid body with a central axis defined therein;

a plurality of chambers forming cylinders defined in said body, each extending parallel to said central axis and spaced radially about said central axis at approximately the same axial location;

a plurality of valves having respective inlet orifices radially spaced about said central axis and aligned with respective ones of the cylinders;

manifold means for communicating each of said orifices with a fluid;

a plurality of piston members slidably received in respective ones of said cylinders, each piston member having a closure sleeve extending from one end thereof toward a respective orifice and formed such that engagement of the end of the closure sleeve with the orifice closes the respective valve while retraction of the closure sleeve from the orifice opens the respective valve;

a circular fluid chamber formed about said central axis intersecting each of said cylinders;

ductwork formed in said body communicating said circular chamber with a source of pressurized fluid for operating said piston members;

a plurality of needle elements each extending in parallel through said piston members and closure sleeves and having a tapered tip at one end axially introducible into the orifice of a respective valve to restrict the flow of fluid into the orifice;

a common drive member surrounding said central axis, the opposite ends of said needle elements being attached to said drive member; and

a screw drive mounted to said body coaxial with said central axis for advancing and retracting said common member to introduce and withdraw all of said needle elements at once.

4,211,259

PLASTIC TUBE

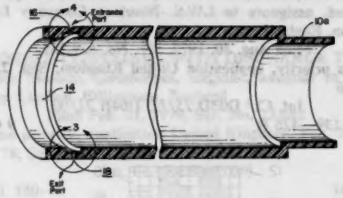
James L. Butler, Westlake Village, Calif.

Filed Apr. 14, 1978, Ser. No. 896,343

Int. Cl.[2] F16L *47/02*

U.S. Cl. 138—109 5 Claims

1. A pipe having an internal peripheral channel at one end thereof displaced inwardly from said end, an entrance port extending through said pipe into said channel to permit an adhesive to be injected into the channel through the port to form a ring of adhesive around the end of an adjacent pipe inserted into said one end of said first-named pipe to bond the first-named pipe and the adjacent pipe to one another, an exit port extending through said first-named pipe from said channel angularly displaced from said entrance port to permit excess



adhesive to be discharged therethrough, and a rupturable film extending across the exit port to prevent discharge of the adhesive therethrough until a predetermined adhesive pressure is reached in the channel.

4,211,260

MULTILAYER VESSEL OR TUBE CONSTRUCTION

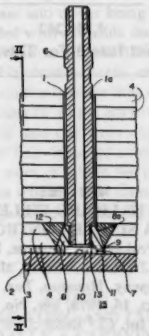
Karl H. Prischmann, Hattingen, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 823,501, Aug. 10, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,265

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636710

Int. Cl.[2] F16L *9/16*

U.S. Cl. 138—143 4 Claims



1. A multilayer vessel, comprising, an inner core tube and a plurality of supporting layer tubes disposed around and associated with said inner core, each of said supporting layer tubes having degassing bores, a blind layer provided between said core tube and the innermost supporting layer tube, a plurality of core plugs resting on said core tube and provided in a number corresponding to the number of degassing bores, said blind layer having a plurality of openings therethrough provided in a number corresponding to the number of said core plugs, each of said core plugs being disposed in one of said openings of said blind layer and each of said core plugs being welded by its upper portion only to a relatively few of said support layers, each of said core plugs having a threaded bore communicating with the atmosphere, and a degassing pipe threaded into said threaded bore and having a passage defined therethrough, each of said core plugs having an underside resting on said core tube with a plurality of grooves therein.

4,211,261

FABRICS FOR PROTECTIVE GARMENTS HAVING STRANDS OF REFLECTIVE MATERIALS

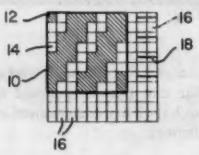
Parvez Mehta, Leeds, and Anthony M. Warnes, Ilkley, both of England, assignors to I.W.S. Nominee Company Limited, London, England

Filed Aug. 30, 1977, Ser. No. 829,251

Claims priority, application United Kingdom, Sep. 2, 1976, 36448/76

Int. Cl.[2] D03D *15/12*; D04B *21/00*

U.S. Cl. 139—425 R **9 Claims**



1. A protective, reflective dual ply fabric having radiant heat reflective properties for use in construction of protective garments for persons working in close proximity to fire and other heat sources composed of textile yarns intermeshed with strands of heat reflective and protective materials, in which a major proportion of one face of the dual ply fabric is composed of the textile yarns and a major proportion of the other face of the dual ply fabric is composed of the heat reflective and protective strands.

4,211,262

Patent Not Issued For This Number

4,211,263

DUAL FILL RATE LIQUID FILLER APPARATUS HAVING A SINGLE CONTROL VALVE

Harry L. Kennedy; Prakash M. Kesaree, both of Freeport, and Robert H. Reeves, Jr., Lake Jackson, all of Tex., assignors to Velasco Scale Company, Houston, Tex.

Filed Oct. 16, 1978, Ser. No. 951,991

Int. Cl.[3] B65B *3/28*

U.S. Cl. 141—83 **9 Claims**

1. An apparatus for filling a container to a predetermined weight with a liquid at a first and a second fill rate, the apparatus being of the type having

(a) a conduit having an emission end adapted to introduce a liquid from a source into the container,

(b) a scale adapted to generate a first and a second control signal when the weight of the liquid within the container equals a first and a second cut-off weight, respectively, and

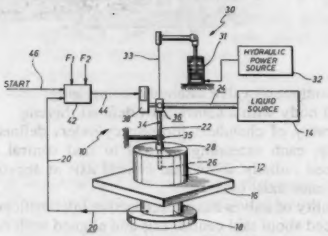
(c) an intiating signal generator for generating an initiating signal to initiate filling of the container,

wherein the improvement comprises:

a single control valve interposed in a flow control relationship between the liquid source and the emission end of the conduit, the control valve being of the type that has a valve element therein that is movable from a closed to a first open position and from the closed to a second open position wherein the valve element respectively defines first and second liquid flow cross section areas, the first and the second cross section areas being respectively sized to pass a liquid from the source through the conduit and into the container at a first and second fill rate;

an actuator operatively associated with the control valve and responsive to a first and a second actuating force to move the valve element against a biasing force to the first open position and to the second open position, respectively;

an interface arrangement operatively associated with the scale and adapted to apply the actuating forces to the actuator, the interface arrangement being responsive to the intiating signal to apply the first actuating force to the actuator to move the valve element from the closed to the



first open position to permit introduction of liquid into the container at the first fill rate until the first cut-off weight is reached,

the interface arrangement being responsive to the first control signal to terminate application of the first actuating force to permit the valve element to respond to the biasing force and return to the closed position and to thereafter apply the second actuating force to the actuator to move the valve element from the closed to the second open position to permit introduction of liquid into the container at the second fill rate until the second cut-off weight is reached, the interface being responsive to the second control signal to terminate application of the second actuating signal to the actuator.

4,211,264

LOG SPLITTER

Robert M. Cross, 8927 Greiner Dr., Houston, Tex. 77080

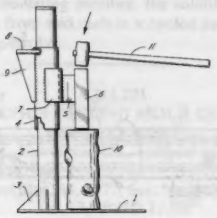
Filed Dec. 4, 1978, Ser. No. 966,118

Int. Cl.[2] B27L *7/00*

U.S. Cl. 144—193 D **2 Claims**

1. In a log splitter having a base plate, a pole vertically mounted on said base plate, a wedge vertically movable on said pole and means on said wedge to receive blows, the improvement comprising said wedge being mounted on a cylindrical

member for movement on said pole, and a plate means extending laterally from said member on the opposite side of said



member from said wedge for recieving blows to complete a split.

4,211,265

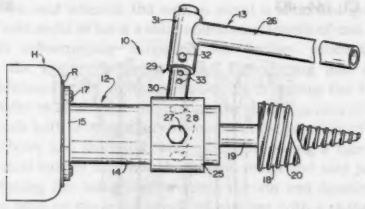
LOG SPLITTING APPARATUS

Russell H. Thackery, 2376 Brentwood Rd., Columbus, Ohio 43209

Filed Feb. 2, 1978, Ser. No. 874,414

Int. Cl.[2] B27L *7/00*; A47J *49/02*

U.S. Cl. 144—194 **18 Claims**



1. A log splitting apparatus comprising

a splitter head assembly including a splitter head having a spiral thread formed on a conical surface, an elongated supporting drive shaft projecting axially from a base of the splitter head, and shaft coupling means provided on said drive shaft in relatively remote relationship to said splitter head for mechanical coupling thereof with a power source,

a support housing assembly including an elongated tube having bearing means in which said drive shaft is journalled in axially extending relationship with the splitter head projecting axially with respect to one end of said tube and the shaft coupling means at the opposite end thereof, and mounting means attached to said tube for mounting thereof on a power source and effecting engagement of said drive shaft coupling with the power source in driving relationship, and

a log stop bar assembly including an elongated bar and support means for said bar, said support means being rotatably mounted on said support housing tube for angular displacement relative thereto and supporting said bar in axially extending, laterally spaced relationship to said splitter head for defining a throat in combination with said splitter head for passage of a log therethrough, and securing means on said support means and said support housing respectively for locking the same in selective relative angular positions.

4,211,266

FLEXIBLE CONTAINER WITH DISCHARGE TUBE

Frederick Massey, Cleethorpes, England, assignor to Tioxide Group Limited, Billingham, England

Filed Feb. 21, 1979, Ser. No. 13,682

Claims priority, application United Kingdom, Feb. 23, 1978, 07192/78; Sep. 16, 1978, 37087/78

Int. Cl.[2] B65D *33/38*

U.S. Cl. 150—1 **14 Claims**

1. A container comprising a closed sidewall, a cover and a base; said sidewall, base and cover being of flexible material, said base being provided with a flexible discharge tube and said cover being provided with a flexible filling tube, said flexible tubes having releaseable closure means, said base and sidewall being constructed in such a manner that said base assumes an angle of between 55° and 75° to the horizontal plane across the base of the sidewall of said container during discharge of its contents; a plurality of flaps attached externally to said base by one side and the free sides of which are provided with releasable connecting means whereby said flaps can be secured over said flexible discharge tube; and means for lifting said container.

4,211,267

THERMAL INSULATING AND CUSHIONED BAG, ESPECIALLY A CARRYING BAG

Leif O. Skovgaard, Jaegumvej 4, Vrogum, DK-6840 Oksbol, Denmark

Filed Sep. 25, 1978, Ser. No. 945,110

Claims priority, application Denmark, Sep. 23, 1977, 4212/77

Int. Cl.[2] A61F *7/00*; B65D *33/00*

U.S. Cl. 150—2.1 **11 Claims**

1. A thermal insulating and shock absorbent carrying bag comprising

opposed walls each formed of an outer layer and inner layer of thermoplastic sheet material, and an intermediate layer of thermal insulating material disposed between and separating said inner and outer layers,

said outer layer comprising a thin, flexible film of thermoplastic polyethylene foam having insulating properties,

said inner layer comprising at least one thin flexible sheet of thermoplastic polyethylene film,

said intermediate layer comprising a soft, flexible and com-

pressible padding of thermoplastic polyester fibers having high insulating properties,

said inner, outer and intermediate layers being joined together by welded seams along the edges of said walls.

4,211,268

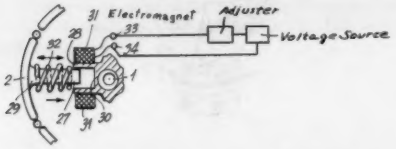
WHEEL

Borut Ravnikar, Pod Topoli 19, Ljubljana, Yugoslavia

Filed Apr. 28, 1978, Ser. No. 901,118

Int. Cl.[2] B60B *9/28*

U.S. Cl. 152—5 **1 Claim**



1. A wheel having a hub and a rim encircling the hub and spaced therefrom, said wheel comprising

a plurality of controlled variable length spokes extending radially from the hub to the rim and supporting said rim coaxially around said hub, each of the spokes being divided into two aligned parts of ferromagnetic material spaced from each other; and

spoke length varying means for varying the lengths of the spokes by electromagnetic force, said spoke varying means comprising a cup formed in a first of the parts for accommodating the second of the parts, an electromagnet having a coil coaxially positioned around said cup and a spring coaxially mounted around the second of the parts.

4,211,269

METHOD OF CENTRIFUGALLY CASTING METAL UNDER AN INERT ATMOSPHERE

Gerard Bentz, Elancourt-Trappes; Jean Galey, Voisins-Bretonneux, and Serge Devalois, Fourqueux, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et L'Expoitation des Procedes Georges Claude, Paris, France

Filed May 16, 1978, Ser. No. 906,553

Claims priority, application France, Jun. 1, 1977, 77 16675

Int. Cl.[2] B22D *13/02, 21/02, 23/00*

U.S. Cl. 164—67 **4 Claims**

1. In a method of casting metal in a rotary mold, the steps of:

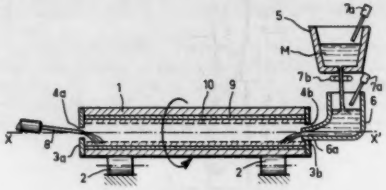
continuously rotating the mold;

introducing inert liquified gas into the rotating mold to spread the liquid over the inner surface of said mold;

directing a first molten metal into the rotating mold, the first metal being urged by centrifuging against the inner surface of the mold and solidifying therein to form a first metallic layer;

continuing the introduction of inert liquified gas into the rotating mold as the first molten metal is directed thereto and during the solidification of the first metal, the gas filling the cavity formed by said first metallic layer;

said inert liquified gas being introduced into said mold during the insertion of said first molten metal at a rate corresponding to a volume of gas in the gaseous phase equal to at least five times the volume of the cavity to be filled, to



maintain in the cavity an atmosphere having an oxygen content of less than 0.1%; and

directing a second molten metal into the rotating mold after the solidification of the first metal, the second metal being urged by centrifuging against the inner surface of the cavity formed by said first layer and solidifying therein to form a second metallic layer.

4,211,270

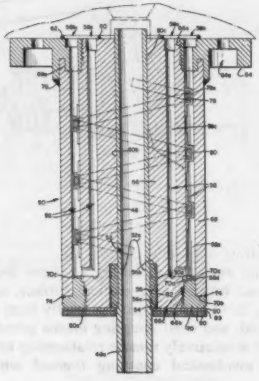
METHOD FOR CONTINUOUS CASTING OF METALLIC STRANDS AT EXCEPTIONALLY HIGH SPEEDS

George Shinopulos; M. Ronald Randlett, both of Burlington, and Terry F. Bower, Needham, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Jul. 28, 1978, Ser. No. 928,881

Int. Cl.[2] B22D *11/00*

U.S. Cl. 164—83 **80 Claims**



1. A method for continuously casting a metallic strand from a metallic melt comprising:

providing a die having a first end with a coolerbody having a first end surrounding a portion of said die to enable portions of said die to be cooled and with an insulating member located between a portion of said die and said coolerbody to insulate a portion of said die from the cooling of said coolerbody, the location of said insulating member being at the first end of the coolerbody and extending between said die and said coolerbody a first distance;

immersing said first end of said coolerbody in the melt a distance greater than said first distance to produce a solidification front within the die below the level of the melt

when the melt is withdrawn through said coolerbody; and,

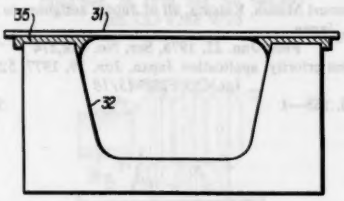
withdrawing molten metal from the melt through said die while cooling said die through said coolerbody, said cooling completely solidifying the molten metal into a strand within a portion of the die below the level of the melt and above the insulating member, the solidified strand being withdrawn from said melt in a cycled pattern of forward and reverse strokes.

4,211,271

CONTINUOUS CASTING MOLD GEOMETRY IMPROVEMENT

George C. Ward, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Dec. 14, 1977, Ser. No. 860,648
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—87 **12 Claims**



1. An improved process for the prevention of corner cracking during the continuous casting of metals of the type wherein molten metal is cast into a mold, formed by a peripheral groove in a rotating casting wheel and a band which seals a length of said groove, and wherein the molten metal is solidified in the shape of said mold to form a solid continuous length of cast bar which is subsequently extracted for further processing, wherein the improvement comprises introducing into said mold additional mold defining means for reducing the high heat transfer rates and for eliminating the sharp corners of the mold which both would otherwise occur at the junction of the wheel groove and the band, said means providing a thermal and physical barrier between the molten metal and said junction, reducing the solidification stress therein and forming a nonsharp edge on the solid length of cast bar with a radius of at least ten percent of the mold depth.

4,211,272

COOLING OF INGOTS OR CASTINGS

Hans Schrewe, Duisburg, and Fritz-Peter Pleschiutschnigg, Düsseldorf-Angermund, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

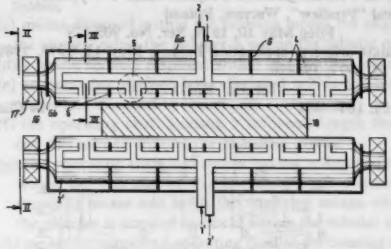
Filed Dec. 20, 1978, Ser. No. 971,406
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2757694
Int. Cl.² B22D *11/124*
U.S. Cl. 164—89 **1 Claim**

1. Method of cooling ingots or castings moved and supported by means of roller tracks, there being a plurality of spaces, each bounded by a surface portion of an ingot or casting between lines of contact with respective two adjacent rollers of one of the tracks, chamber means and adjacent surface portions of these rollers, comprising the steps of:

atomizing a coolant by means of air in order to produce a coolant fog or mist within each of said spaces;

retaining the fog or mist in the space in a stagnant flow, so that essentially only air with vaporized water in the gaseous phase escapes from said space and liquid coolant droplets constituting the fog or mist stagnate and float in said space, filling it completely and being exposed to radiation from said surface portions; and

wherein the coorresponding amount of latent heat of vaporization of the atomized coolout fed to said space per unit



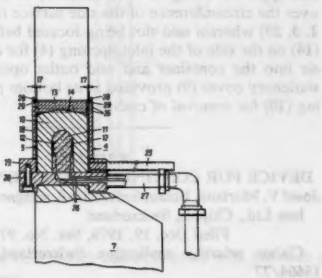
time is larger than the amount of heat radiated by said surface portion of the ingot or casting into said space plus the amount of heat transferred by conduction out of said surface portion into at least one of the two rollers.

4,211,273

ARRANGEMENT AT A CONTINUOUS CASTING PLANT

Werner Scheurecker, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Mar. 27, 1979, Ser. No. 24,305
Claims priority, application Austria, Apr. 5, 1978, 2381/78
Int. Cl.² B22D *11/128*
U.S. Cl. 164—150 **11 Claims**



1. In an arrangement at a continuous casting plant strand guiding rollers, supporting means supporting said strand guiding rollers relative to said strand guiding stand, and load measuring means interposed between at least some of said supporting means between at least some of said strand guiding stand, the improvement which is characterized in that:

bushings are mounted on said strand guiding stand adjacent each supporting means with an interposed measuring means, each of said bushings being open towards the roller pertaining to its supporting means;

each of said load measuring means includes a measuring body and a supporting head, each load measuring means being inserted in one of said bushings with its supporting head directed toward the pertaining roller and being peripherally surrounded by said bushing so as to leave free a narrow annular gap, a space communicating with said annular gap is provided between each one of said bushings and its pertaining load measuring means; and

grease is pressed in said space between said bushings and said load measuring means, said grease extending into said narrow annular gap and emerging from said annular narrow gap to form a grease ring.

4,211,274

EQUIPMENT FOR COOLING AND SEPARATION OF CASTINGS AND MOULDING SAND

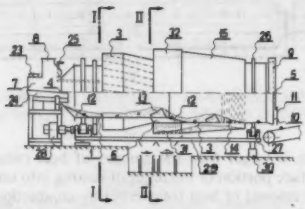
Stanislaw Slowinski; Stanislaw Vasina; Jerzy Pasich; Jerzy Kosek, and Stanislaw Glownia, all of Cracow, Poland, assignors to Przedsiegiorstwo Projektowania I Wyposazania Odlewni "Prodlew", Warsaw, Poland

Filed May 10, 1978, Ser. No. 905,179

Claims priority, application Poland, May 12, 1977, 198090; Jun. 13, 1977, 198820

Int. Cl.[2] B22D *29/00*

U.S. Cl. 164—401 14 Claims



1. Apparatus for cooling and separating castings from moulding sand, comprising in combination: a rotary container of longitudinal axis substantially horizontal, said container having on one side thereof an inlet opening for introducing the moulding sand together with the castings said inlet opening is enclosed with a casing connected by means of a suction duct having an exhaust system associated therewith, and, on another side, an outlet opening to remove castings; a sieve wall located between the said openings to remove moulding sand; said apparatus being further defined by at least one slot (6, 38) over the circumference of the side surface of the container (1, 2, 3, 20) wherein said slot being located before the sieve wall (14) on the side of the inlet opening (4) for ensuring inflow of air into the container and said outlet opening (5) having a stationary cover (9) provided at its bottom part with an opening (10) for removal of castings.

4,211,275

DEVICE FOR CONTINUOUS HORIZONTAL CASTING

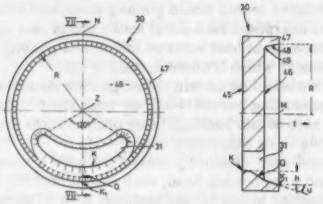
Josef V. Morianz, Illnau, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 19, 1978, Ser. No. 971,005

Claims priority, application Switzerland, Dec. 19, 1977, 15604/77

Int. Cl.[2] B22D *11/00*

U.S. Cl. 164—440 15 Claims



1. An improved apparatus for use in the continuous horizontal casting of molten metal comprising, in combination, a molten metal holding means having a floor and an outlet; a mold in line with said holding means and nozzle means disposed between said holding means outlet and said mold the improvement comprising:

said nozzle means comprising a plate having a first surface facing said holding means and a second surface facing said mold, said plate being provided with an elongated substantially arc-shaped opening lying in a plane substantially perpendicular to the flow of said molten metal and communicating said holding means outlet with said mold, wherein said elongated opening varies in size along the entire length with the greatest cross-section at the midpoint and substantially symmetrically tapering toward both ends so as to provide for preferential metal flow to said mold, said opening having a lower surface provided at least in part with a downwardly sloping run out surface extending from said first surface of said plate to said second surface of said plate.

4,211,276

METHOD OF MAKING FIN ELEMENTS FOR HEAT EXCHANGERS

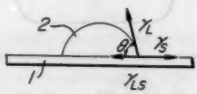
Masaaki Itoh, Tsuchiura; Tsuneyoshi Takasuna, Hitachi; Yuichi Ishikawa, Sakuramura; Hideyuki Kimura, Chiyodamura, and Masanori Musoh, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 22, 1978, Ser. No. 918,274

Claims priority, application Japan, Jun. 29, 1977, 52-76511

Int. Cl.[2] F28F *13/18*

U.S. Cl. 165—1 9 Claims



1. A method of making a fin element for use in a heat exchanger which in use is contacted on its surface by a specific liquid medium, comprising:

selecting sheet material,

placing droplets of said liquid medium on an unroughened surface of said sheet material,

determining the contact angle θ which said droplets make with reference to the plane of the unroughened surface,

roughening the surface of the sheet material to have a coefficient of surface roughness R which is approximately equal to an amount $1/\cos\theta$, in which R is a ratio of surface area of the fin element after and before roughening, and θ is a contact angle of a liquid droplet formed from said liquid medium which adheres to the surface of the fin element sheet material before roughening.

4,211,277

HEAT EXCHANGER HAVING INTERNAL FITTINGS

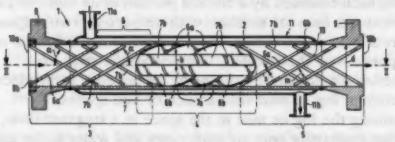
Friedrich Grosz-Röll, Zurich; Gerhard Schutz, and Felix Streiff, both of Winterthur, all of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed May 23, 1978, Ser. No. 908,696

Claims priority, application Switzerland, May 31, 1977, 6641/77; Feb. 16, 1978, 1686/78

Int. Cl.[2] F28F *13/12*

U.S. Cl. 165—109 T 16 Claims



1. A heat exchanger comprising

means defining a flow passage having a predetermined diameter (d) along a longitudinal axis of said passage; and

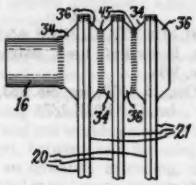
a plurality of fittings disposed in said flow passage, each said fitting including at least two groups of webs, each group including a plurality of webs, said webs of each group being disposed in parallel relation to each other at a predetermined spacing (m), in angular relation to said flow passage axis and in crossing relation to said webs of the other group, at least some of said webs being interconnected to each other at points of intersection thereof wherein at least two of said fittings are disposed in consecutive relation in said passage and in 90° relation to each other along said longitudinal axis.

4,211,278

HEADER STRUCTURE FOR A PANEL-TYPE RADIATOR AND METHOD OF MAKING SAID STRUCTURE

Moreland P. Bennett, Hickory; Philip A. Cacalloro, Newton, and Albert J. McCloy, Hickory, all of N.C., assignors to General Electric Company, Philadelphia, Pa.

Filed Sep. 28, 1978, Ser. No. 946,893
Int. Cl.² F28F 9/26
U.S. Cl. 165—130 **3 Claims**



1. In a panel-type radiator,

(a) a pair of panels disposed in side-by-side relationship, each comprising two thin dished sheets of steel joined together around their perimeters, said perimeters defining the outer edge of the panel and the sheets defining spaced walls of the panel,

(b) a first sheet of one panel being disposed immediately adjacent a first sheet of the other panel,

(c) each of said first sheets being provided with a thin-walled embossment of generally truncated conical form having a centrally-disposed opening extending through the outer end of said embossment,

(d) each of said embossments further comprising a flange surrounding said opening and extending generally radially with respect to said opening and an annular portion of rounded cross-sectional form joining said flange and the generally conical portion of said embossment,

(e) said flanges of said embossments being disposed in juxtaposed relationship with said openings generally aligned, thus providing externally of said flanges a groove of generally V-shaped cross-section between said annular portions of the two embossments,

(f) a deposit of silicon bronze forming a brazed joint between said embossments comprising an annular filet of silicon bronze disposed in said V-shaped groove and bonded to said annular portions and a film of silicon bronze between said juxtaposed flanges and bonded to said flanges.

4,211,279

PLUNGER LIFT SYSTEM

Kenneth M. Isaacks, North Glenn, Colo., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 20, 1978, Ser. No. 971,537
Int. Cl.² E21B 43/00, 43/16
U.S. Cl. 166—64 **6 Claims**

3. In a plunger lift system for wells having a tubing string extending downward from a wellhead, a plunger catcher and trip assembly, comprising:

(a) tubular means adapted for engagement with the wellhead and having a bore aligned with the bore of the tubing string;

(b) housing means extending radially from the tubular means;

(c) means disposed within the housing means for engaging the plunger when the plunger is within the tubular means;

(d) a piston slidably disposed within the housing means;

(e) an operating shaft slidably disposed within the housing means and attached to the piston;

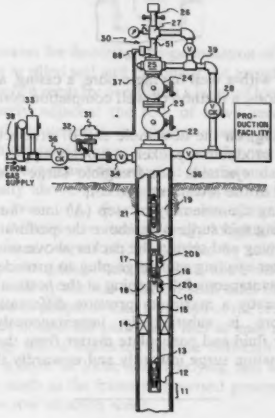
(f) the operating shaft haviang a sufficient length that one end thereof can contact the engaging means;

(g) the operating shaft and piston having a first position in which the one end of the operating shaft contacts the engaging means and holds the engaging means whereby the plunger is trapped and held within the tubular means;

(h) means for supplying operating fluid to the housing means to move the piston and operating shaft to the first position.

5. A plunger catcher and trip assembly, comprising:

(a) tubular means adapted for engagement with a wellhead



and having a bore which can be aligned with the bore of a tubing string;

(b) housing means extending radially from the tubular means;

(c) means for engaging a plunger when the plunger is within the tubular means;

(d) the tubular means having an opening surrounded by said housing means through which the engaging means can be partially projected into the bore of the tubular means;

(e) a piston slidably disposed within the housing means;

(f) an operating shaft slidably disposed within the housing means and attached to the piston;

(g) the operating shaft having a sufficient length that one end thereof can contact the engaging means and hold the engaging means partially projected through the opening in the tubular means;

(h) the operating shaft and piston having a first position in which the one end of the operating shaft contacts the engaging means and holds the engaging means partially extended into the bore of the tubular means whereby the plunger is trapped and held within the tubular means;

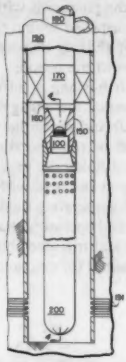
(i) means for supplying operating fluid to the housing means to move the piston and operating shaft to the first position.

4,211,280

DOWNHOLE SURGE TOOLS, METHOD AND APPARATUS

Robert D. Yeates, 3217 High Sky Dr., Midland, Tex. 79703

Division of Ser. No. 947,049, Sep. 29, 1978, Pat. No. 4,182,419.
This application May 15, 1979, Ser. No. 39,156
Int. Cl.[2] E21B *21/00*
U.S. Cl. 166—311 **2 Claims**



1. For use with a well having a bore, a casing, and production perforations, a method of well completion comprising the steps of:

(A) installing, on the downhole end of production tubing, below a production packer, a tubular nipple, said nipple having an ejectable non-frangible surge plug sealably disposed in the lower end thereof;

(B) lowering the assembly of step (A) into the well bore, positioning said surge plug above the perforations;

(C) positioning and setting the packer above said assembly;

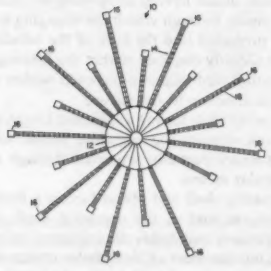
(D) drop bar ejecting said surge plug to provide a substantially instantaneous full opening at the bottom of the tubing, whereby a maximum pressure differential into the well bore is substantially instantaneously created, whereby fluid and particulate matter from the well bore and formation surge inwardly and upwardly through the tubing.

4,211,281

ARTICULATED PLURAL WELL DEEP WATER PRODUCTION SYSTEM

John E. Lawson, Houston, Tex., assignor to Armco, Inc., Middletown, Ohio

Filed Feb. 22, 1979, Ser. No. 14,036
Int. Cl.[2] E21B *33/035*
U.S. Cl. 166—345 **21 Claims**



19. Apparatus for subsea production of fluids through a manifold and central riser from a plurality of individual wells drilled in different parts of a field in deep water, which comprises:

a central manifold base having flow line connectors thereon;

an elongated boom for each well to be produced in a field, each boom being rigidly attached to the manifold base;

a temporary guide base mounted to the other end of each boom for establishing a well site; and

a flow line extending along each boom from a flow line connector on the central manifold base.

21. A method of producing well fluids from a number of individual wells drilled in different parts of a field located in deep water to a production platform via a central riser, which comprises the steps of:

submerging to the ocean floor a subsea production apparatus which includes a central manifold base having an elongated boom for each well articulated thereto at one end and mounting a temporary guide base at the other end of the boom for establishing a well site, and a preinstalled flow line extending along each boom from the manifold base;

landing a manifold section on the manifold; and

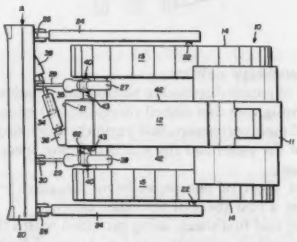
landing a subsea tree on each temporary guide base.

4,211,282

ADJUSTABLE BLADE STABILIZER AND CONTROLS

Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 23, 1978, Ser. No. 953,740
Int. Cl.[2] E02F *3/76*
U.S. Cl. 172—7 **9 Claims**



1. In an earth-working vehicle having a frame, a pair of push arms pivotally secured at one of their ends to said frame and a blade pivotally secured to the push arms at their other ends, a pair of lift cylinders pivotally interconnected between said frame and said blade, the improvement comprising:

an extensible and retractable blade stabilizer pivotally secured to the frame front end and operatively connected to said blade;

control means operably connected with at least one of said lift cylinders and responsive to lateral movement of said blade to extend or retract said blade stabilizer thereby resisting relative lateral movement between said blade and said frame front end;

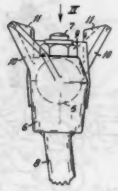
means for mounting said lift cylinders on opposed sides of said frame front end, said mounting means permitting pivotal movement by said lift cylinders about two mutually perpendicular axes, each lift cylinder being pivotal about a first axis perpendicular to the longitudinal axis of said vehicle and each lift cylinder being pivotal about a second axis perpendicular to said first axis, said lift cylinders being pivotal about said second axes in response to lateral movement of said blade, and said control means being responsive to pivotal movement by one of said lift cylinders for actuating said blade stabilizer to resist lateral movement of said blade.

4,211,283

SOIL CULTIVATING IMPLEMENTS

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Dec. 12, 1977, Ser. No. 859,850
Claims priority, application Netherlands, Dec. 16, 1976, 7613949
Int. Cl.[2] A01B 33/12
U.S. Cl. 172—59 13 Claims



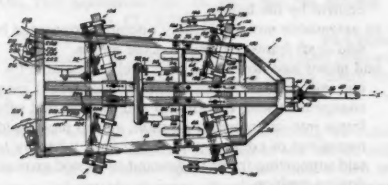
1. A soil cultivating implement comprising a frame and at least one soil working member rotatably mounted on a portion of said frame, said member including a substantially horizontal support and a downwardly extending tine on said support, said tine having an upper fastening portion that is connected to said support with fastening means located adjacent an upper side of that support, upwardly extending screening means being positioned on top of said support, immediately adjacent and in front of said fastening means with respect to the normal direction of rotation of said soil working member leaving a space on top of said support, between said fastening means and said screening means, an upwardly extending, rib-like protecting element being located in said space directly above said support, substantially centrally in front of said fastening means and said element extending from said screening means towards said fastening means.

4,211,284

SUGARCANE CULTIVATOR

Hugo Collado, 502 Cypress La., Palm Springs, Fla. 33461

Continuation-in-part of Ser. No. 791,722, Apr. 28, 1977, abandoned. This application May 2, 1978, Ser. No. 902,035
Int. Cl.[2] A01B 39/08
U.S. Cl. 172—151 25 Claims



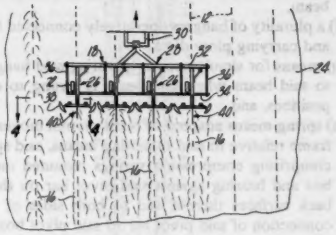
1. In a row crop cultivator having a trailer, a hitching means for connecting the trailer with a towing vehicle, a retractable wheel assembly, and one or more pluralities of cultivator disc assemblies which are individually angularly adjustable relative to the longitudinal axis of the cultivator, the improvement which comprises: arranging three pairs of cultivator disc assemblies on the trailer in tandem relationship to each other, each of the forward four pluralities of cultivator disc assemblies having a central earth working element of larger diameter than the other disc earth working elements of the cultivator disc assembly and each of the forward four pluralities of cultivator disc assemblies having a deflector disc positioned somewhat rearwardly therefrom; positioning the disc earth working elements of the successive tandemly arranged cultivator disc assemblies so that said elements have an alternating inwardly- and outwardly-opening saucer configuration; and positioning the deflector disc so that its saucer configuration alternates with the associated cultivator disc assembly.

4,211,285

AGRICULTURAL METHOD AND IMPLEMENT

Michael S. Pajtas, 11575 Riley Rd., Flushing, Mich. 48433

Filed Apr. 19, 1978, Ser. No. 897,702
Int. Cl.[2] A01B 39/08
U.S. Cl. 172—156 5 Claims



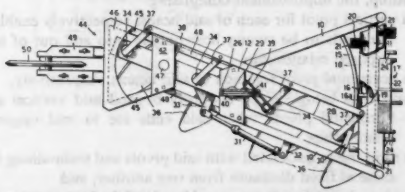
1. An apparatus for fostering the germination of crop seeds sown in rows in tilled soil and inhibiting the growth of weeds adjacent the sown seeds by depositing a layer of loose soil over and immediately adjacent the row of sown seeds prior to sprouting of the sown seeds, the apparatus comprising a frame, a deflector shield carried by said frame and having a generally flat plate constructed and arranged to overlie and extend generally vertically above and longitudinally of a row of sown seeds with its lower edge disposed closely adjacent the soil as the deflector shield is traversed generally longitudinally of the row of sown seeds, a pair of discs carried by said frame, disposed on opposite sides of said flat plate, and constructed and arranged to break up the soil adjacent both sides of the row of sown seeds and to propel at least a portion of the broken up soil onto each side of said flat plate such that at least a portion of the broken up soil is deflected by the deflector shield and deposited in a layer of loose soil overlying and adjacent the row of sown seeds as the frame is traversed generally longitudinally of the row of sown seeds.

4,211,286

REVERSIBLE DISC PLOUGH

William S. Allen, Tinaroo Falls Dam Rd., Kairi, Queensland 4872, Australia

Filed Aug. 3, 1978, Ser. No. 930,795
Claims priority, application Australia, Aug. 11, 1977, PD1197
Int. Cl.[2] A01B 3/16, 3/40
U.S. Cl. 172—222 4 Claims



1. A reversible multi-disc plow comprising:
(a) a main frame,
(b) means for mounting said main frame at its front end to a three point lifting system of a tractor, said mounting means comprising a mounting frame including a trans-

verse pivot box and a transverse front pivot bar passing through and centrally pivotally mounted to said pivot box about a vertical axis, said pivot bar being secured at its opposite ends to said main frame, whereby said main frame is mounted for pivotal movement relative to said mounting means about a substantially vertical axis,

(c) a beam pivoted to said main frame about a substantially vertical axis,

(d) means for swinging said beam to right and left hand plowing positions,

(e) a furrow wheel operatively connected to the rear of said beam,

(f) a plurality of hangers operatively connected to said beam and carrying plow discs,

(g) means for simultaneously pivoting said hangers relative to said beam when said beam is swung to either of its positions, and

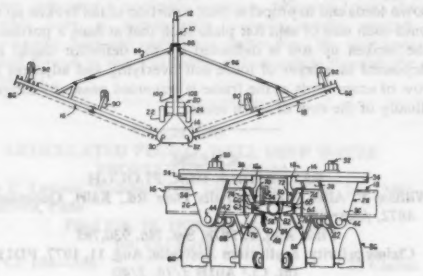
(h) spring means adapted to resist pivotal movement of said frame relative to said mounting means, said spring means comprising compression springs mounted on said pivot box and bearing against said pivot bar on the front and back surfaces thereof and to both sides of the pivotal connection of said pivot bar to said pivot box.

4,211,287

FOLDING TOOL BEAMS WITH LEVEL EQUALIZER THEREBETWEEN

Harold K. Garrison, Newton, Kans., assignor to Hesston Corporation, Heston, Kans.

Filed Jun. 9, 1978, Ser. No. 914,075
Int. Cl.[2] A01B *73/00, 5/06*
U.S. Cl. 172—311 **10 Claims**



1. In an implement having a pair of horizontal tool beams with inner ends disposed in normally mutually opposed relationship, the improvement comprising:

a vertical pivot for each of said beams respectively enabling said ends to be swung horizontally into and out of said opposed relationship;

a horizontal pivot for each of said beams, respectively,

said ends being spaced inwardly beyond said vertical and horizontal pivots when said ends are in said opposed relationship;

a rigid frame associated with said pivots and maintaining the same at fixed distances from one another; and

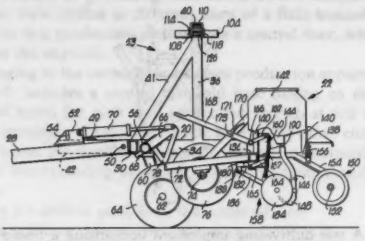
a pivotal coupling between said ends of the beams maintaining said ends at substantially the same relative vertical position when said ends are in said opposed relationship notwithstanding relative swinging of the beams about said vertical and horizontal pivots.

4,211,288

RAISABLE IMPLEMENT FRAME WITH OPERABLY CONNECTED WHEEL AND DRAFT FRAMES

Roy E. Applequist, Salina, Kans., assignor to Great Plains Manufacturing Incorporated, Salina, Kans.

Division of Ser. No. 836,719, Sep. 26, 1977, Pat. No. 4,171,022.
This application Oct. 10, 1978, Ser. No. 950,247
Int. Cl.[3] A01B *63/22*
U.S. Cl. 172—328 **3 Claims**



1. An implement carrier shiftable between a ground conditioning position and a transport position including:

a longitudinally extending, vertically swingable draft frame having the forward extremity thereof adapted to be drawn by a draft vehicle;

an implement supporting frame pivotally connected to said draft frame for movement about a transverse axis between a lowered, generally horizontal ground conditioning position and a raised, generally horizontal transport position;

wheel means;

wheel frame means for rotatably carrying said wheel means on said supporting frame,

said wheel frame means including a transversely extending, essentially horizontal support shaft journalled for rotation in said supporting frame;

linkage means for shiftably mounting said wheel means on said supporting frame for movement of said wheel means into supporting engagement with the ground when the carrier is in its transport position and out of engagement with the ground when the carrier is in its ground conditioning position,

said wheel frame means being pivotally mounted on said supporting frame and connected to said linkage means for control by the latter;

an extendable motor assembly operably connected between said draft frame and said linkage means,

said motor assembly being selectively actuatable for operating said linkage means to move said wheel means into engagement with the ground and to raise said supporting frame into its transport position, and to move said wheel means out of contact with the ground whereby to allow said supporting frame to descend to its said ground conditioning position,

said linkage means including a link element connected to said shaft and to one extremity of said motor assembly, the other extremity of the latter being connected to said draft frame,

said motor assembly functioning to rotate said shaft by shifting said link element, whereby to cause said wheel means to move into and out of engagement with the ground,

there being a stop element secured to said shaft and rotatable along with the latter for engaging said supporting frame whereby to limit the rotation of said shaft;

an implement tool section pivotally mounted on the rear of said supporting frame and spaced behind said wheel means; and

structure secured to said shaft and rotatable along with the latter for engaging a portion of said tool section when said

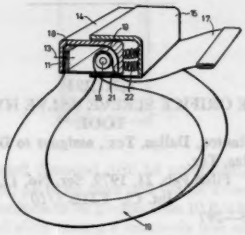
shaft is rotated during shifting of said carrier from its ground conditioning position to its transport position.

4,211,289

SLEEVE WITH ARMBAND

Johann Klein, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 6, 1977, Ser. No. 857,964
Int. Cl.² A61B *5/02*
U.S. Cl. 172—686 **9 Claims**



1. A device for use in measuring blood pressure comprising: a cuff which is windable around a portion of a body and clamp fastening means for maintaining the cuff in the wound position during use comprising a box-shaped outer part having an open side wall parallel to the longitudinal axis of the outer part and a box-shaped inner part which is movable therein perpendicularly with respect to the longitudinal axis of the outer part and has slots in the end faces thereof perpendicular to the longitudinal axis of the outer part, a pressure rod fastened to two opposite sides of the outer part and arranged to pass through the slots in the end faces of the inner part to be parallel to the longitudinal axis of the outer part, and the cuff being fixed to a side face of the inner part parallel to the longitudinal axis of the outer part and looping the pressure rod in the manner of a hairpin.

4,211,290

DRILLING STRING SHOCK-ABSORBING TOOL

Leonard Mason, 9230 - 58 Ave., and Clifford Anderson, 6024 - 87 St., both of Edmonton, Alberta, Canada

Division of Ser. No. 633,414, Nov. 19, 1975, abandoned, which is a continuation of Ser. No. 487,564, Jul. 11, 1974, Pat. No. 3,949,150. This application Nov. 21, 1977, Ser. No. 853,660
Int. Cl.² E21B *17/00*
U.S. Cl. 175—321 **14 Claims**

1. A tool for use in a drill string adapted to circulate pumped drilling fluid to drill a well bore, said tool having utility for absorbing shock loading arising from axial movement of the drilling bit, said tool comprising:

telescopically arranged tubular parts comprising an outer barrel and an inner mandrel received in the barrel, said parts forming an annular space between them which includes a deformable element chamber, said parts being movable longitudinally relative to each other;

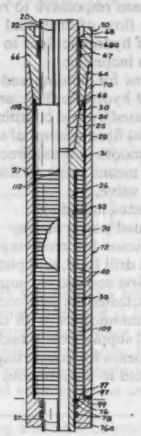
means at the outer ends of the parts for threadably connecting them into the drill string whereby the tool forms part of the drill string;

means carried by the parts for limiting their relative longitudinal movement;

said parts comprising means connecting them so that they rotate together but may move longitudinally relative to each other;

solid resilient deformable element means disposed in the chamber and extending substantially throughout its length, said element means having a spring rate of less than 100,000 pounds per inch and being substantially out of contact with the adjacent barrel or mandrel side wall which is movable by the axial movement of the drilling bit, whereby said element means, in use, experiences throughout its length substantially the total axial shock load;

a pair of opposed compression means, one such means being carried by the mandrel and extending into the chamber adjacent one end thereof, the other such means being carried by the barrel and extending into the chamber adjacent the other end thereof, said compression means being operative to act against the ends of the element means;



a body of operating liquid disposed in the space together with the element means;

seal means disposed in the space above and below the chamber for sealing that portion of the space between said seal means against the entry of well bore drilling fluid thereinto; and

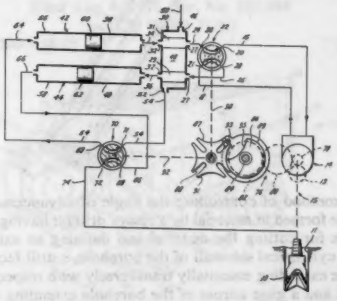
means for pressurizing the operating liquid to substantially equalize it with the pressure of the circulated pumped drilling fluid internal of the tool.

4,211,291

DRILL FLUID POWERED HYDRAULIC SYSTEM

Jackson M. Kellner, Midland, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Mar. 6, 1978, Ser. No. 883,482
Int. Cl.² E21B *7/00*
U.S. Cl. 175—17 **8 Claims**



1. A rotary drill shaft driving system, adapted to be connected to drill pipe providing a source of drill fluid to the

system and useful for rotating a drill shaft having a bit connected at one end of the shaft, through the use of drill fluid supplied to said system, comprising:

a motor driven by hydraulic fluid flowing in only one direction and connected to such shaft means for rotation of such shaft;

drive means for supplying said hydraulic fluid flowing in said one direction;

actuation means adapted to receive drill fluid from said source and responsive to flow of said drill fluid for acutating said drive means; and

coordination means responsive to rotation of such shaft for synchronizing flow of drill fluid to said actuation means with supply of hydraulic fluid to said drive means,

said drive means including:

first supply means for holding and supplying only a fixed amount of said hydraulic fluid, and

a first valve actuated by said coordination means for causing said flow of said fixed amount of said hydraulic fluid to be substantially smooth and unidirectional;

said first supply means being in fluid flow communication with said first valve,

said actuating means including:

reciprocating sealed piston means,

second supply means for receiving and supplying a fixed amount of said drill fluid, said piston means being located between said first and second supply means; and

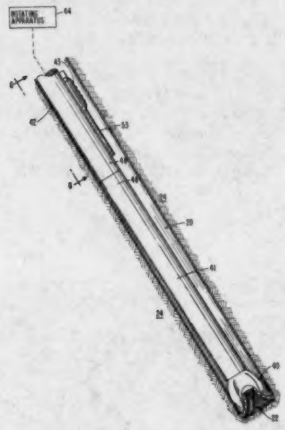
a second valve actuated by said coordination means and in fluid flow communication with said source of drill fluid and said second supply means, said second valve including an outlet and means for converting such discrete amounts of such drill fluid to a continuous flow of such drill fluid at said outlet.

4,211,292

BOREHOLE ANGLE CONTROL BY GAGE CORNER REMOVAL EFFECTS

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Jul. 27, 1978, Ser. No. 928,703
Int. Cl.[2] E21B 7/08
U.S. Cl. 175—61 **64 Claims**



1. A method of controlling the angle of advancement of a borehole formed in material by a rotary drill bit having cutting elements for cutting the material and defining an axially extending cylindrical sidewall of the borehole, a drill face of the borehole extending essentially transversely with respect to the sidewall and a gage corner of the borehole extending circumferentially from the drill face radially outward at an inclination to the cylindrical sidewall comprising operations of:

continuously rotating said drill bit with the cutting elements in contact with the material, and simultaneously during at least one complete drill bit revolution

removing a different amount of material over a preselected partial arc of the circumference of the gage corner than the amount of material removed over the remaining partial arc of the circumference of the gage corner, and

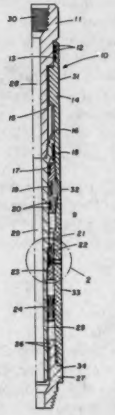
controlling the borehole advancement angle predominantly by interacting cutting elements of said drill bit with the material defining the whole gage corner circumference.

4,211,293

VARIABLE ORIFICE SLEEVE VALVE HYDRAULIC JAR TOOL

James R. Blanton, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 21, 1979, Ser. No. 12,940
Int. Cl.[2] E21B 1/10
U.S. Cl. 175—297 **1 Claim**



1. A hydraulic jar tool connectable to drill string components, comprising:

an outer mandrel having one end attachable to a drill string component;

an inner mandrel extending into said outer mandrel and having an end portion attachable to a drill string component, said outer and inner mandrels having a splined connection permitting non-rotative reciprocating movement of said mandrels;

an anvil and hammer means for producing a jarring action;

means forming a substantially confined annular working fluid chamber between said outer and inner mandrels for reception of a working fluid;

a sleeve in said chamber slidingly mounted between said outer mandrel and said inner mandrel;

said sleeve having a restricted fluid passage extending therethrough;

an adjustable orifice plate that connects with said fluid passage;

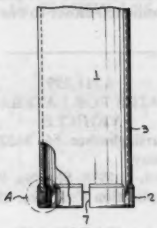
a multiplicity of restricted orifice passages in said plate of different sizes to provide an adjustable fluid passage past said sleeve; and

means for rotating said orifice plate to provide a fluid passage past said sleeve.

4,211,294
IMPREGNATED DIAMOND DRILL BIT

Leonid Multakh, Scranton, Pa., assignor to Acker Drill Company, Inc., Clarks Summit, Pa.

Filed Apr. 21, 1978, Ser. No. 898,697
Int. Cl.² E21B 9/16
U.S. Cl. 175—330 9 Claims

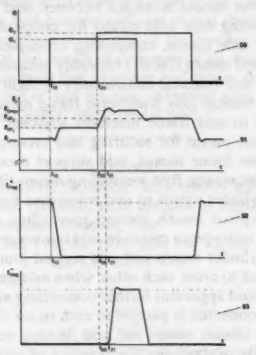


1. An impregnated diamond drill bit comprising: a crown containing diamond particles dispersed within a fused metallic matrix having a hardness of no greater than 10 Rockwell C and containing a metal alloy having a relatively low melting temperature and capable of preparing the surfaces of the diamond particles so that said surfaces have a greater affinity for the metallic matrix and a metal shank attached to said crown, said metal alloy being formed essentially of nickel and manganese so as to give a nickel-manganese alloy.

4,211,295
METHOD AND A SCALE FOR MANUAL OR AUTOMATIC WEIGHING OF OBJECTS OF SAME NOMINAL WEIGHT

Mario Gallo, Zurich, Switzerland, assignor to Wirth, Gallo & Co., Zurich, Switzerland

Filed Jul. 10, 1978, Ser. No. 923,377
Claims priority, application Switzerland, Jul. 28, 1977, 009331/77
Int. Cl.² G01G 23/10, 7/00
U.S. Cl. 177—185 5 Claims

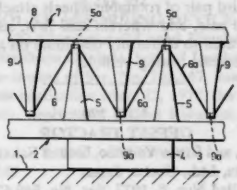


1. Method for manual or automatic weighing of objects of same nominal weight by means of a scale locked over its measuring system, having a computing device for establishing the weight of the objects to be weighed from the digital output signals of mechanical-electrical converters, characterized in that if the load on the measuring system is lower or higher than pre-determined limits of the load corresponding to said nominal weight, an electromagnetically generated transitory force acts upon the load support of the scale and prevents overshooting of said pre-determined load limits, said transitory force being removed when the load on the measuring system is within the pre-determined limits.

4,211,296
SCALE

Bernhard Lötscher, Mühlebergstrasse 88, 8450 Andelfingen, Switzerland

PCT No. PCT/CH78/00011, § 371 Date Apr. 5, 1979, § 102(e) Date Mar. 12, 1979, PCT Pub. No. WO79/00136, PCT Pub. Date Mar. 22, 1979
This PCT application Filed Mar. 12, 1979, Ser. No. 24,861
Claims priority, application Switzerland, Aug. 5, 1977, 9626/77
Int. Cl.² G01G 3/14
U.S. Cl. 177—211 8 Claims



1. In a scale, especially for weighing humans, possessing a pedestal, a movably retained table and at least one measuring element possessing an electrical conductor, wherein the table is operatively connected with the conductor, in order to elongate the conductor as a function of the weight loading of the table and to alter its electrical resistance, the improvement which comprises:

said pedestal possessing a number of holders, each of which holder defines a holding location for the conductor;

said table possessing a number of holders, each of which holders defines a holding location for the conductor;

said table having a table edge;

said holders of both said pedestal and said table being located at the region of said table edge;

said holders of the pedestal and table being arranged in alternating relationship, so that a holder of the table generally follows a holder of the pedestal;

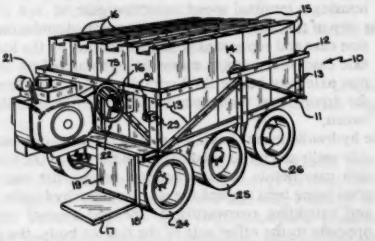
said holding locations being electrically insulated with respect to one another;

said holding locations of the holders of the pedestal being located above the holding locations of the holders of the table, so that said at least one conductor extends in a substantially zig-zag configuration from one holder to the next holder and at the same time serves as both the measuring element and for supporting the table.

4,211,297
WEIGHT VEHICLE APPARATUS

Glenn G. Dunbar, 2608 Overbrook Dr., Toledo, Ohio 43614

Filed Aug. 8, 1978, Ser. No. 931,995
Int. Cl.² B62D 21/02
U.S. Cl. 180—24.02 7 Claims



1. A scale testing vehicle for selectively positioning scale

calibration weights on platform scales, comprising, in combination, a frame forming a weight bed, said frame having a longitudinal axis, at least one weight positioned on said bed, and a suspension system having a first axle pivotally secured to said frame for movement about such longitudinal axis of said frame, said first axle having two ends, a first pair of rotatable wheels, means attaching said first wheels to said ends of said first axle, a subframe having a longitudinal axis, means pivotally securing said subframe to said frame for movement about a transverse axis of such vehicle, a second pair of rotatable wheels, means securing said second pair of wheels to said subframe on a transverse axis of such vehicle, a second axle having two ends, means pivotally attaching said second axle to said subframe for movement about the longitudinal axis of said subframe, a third pair of rotatable wheels attached to said ends of said second axle, and wherein said first, second and third wheels are located to uniformly distribute on a platform scale the load of the scale testing vehicle.

4,211,298

OFFSET TRACTOR

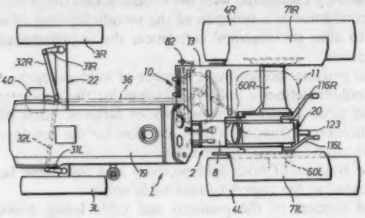
Tomio Tanaka, and Rinzo Yamano, both of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Nov. 8, 1977, Ser. No. 849,671

Claims priority, application Japan, Nov. 11, 1976, 51-136468; Nov. 12, 1976, 51-152675

Int. Cl.² B60K *17/00*

U.S. Cl. 180—75 **6 Claims**



1. In a two-axle four-wheel offset tractor including a tractor body composed of a transmission case as its structural element and offset to one side with respect to the center of the tread of the wheels, steering means disposed on one side of the tractor body opposite to its offset side and including a driver's seat, a steering wheel, brake and clutch pedals and a step, and hydraulic means for raising and lowering a working implement and working implement connecting means mounted on a top rear portion of the tractor body, the improvement comprising:

a long rear wheel drive shaft and a short rear wheel drive shaft outwardly extending from differential means in the transmission case and covered with a long rear axle case and a short rear axle case respectively, each of the axle cases being provided with a rear wheel brake device between its inner end and the side wall of the tractor body opposite thereto and with a downwardly extending case housing a terminal speed reduction gear;

the step of the steering means being attached to the transmission case and supported at its rear portion by the long rear axle case, seat support means being mounted on the long rear axle case beside the hydraulic means and supporting the driver's seat with cushioning means provided therebetween;

the hydraulic means having a pair of lift arms pivoted to its side walls and mounted directly on the top of the transmission case beside the seat support means, the pair of lift arms being bent toward the seat from the hydraulic means and extending rearwardly of the seat toward one side opposite to the offset side of the tractor body, the pair of lift arms having free ends respectively disposed on opposite sides of a line through the center of the tread; and

the working implement connecting means including a pair of opposite lower links pivoted at their base ends to opposite sides of a lower rear portion of the transmission case and supported at intermediate portions thereof by lift rods attached to the free ends of the lift arms, the lower links having free ends opposed to each other between the opposite wheels with the midpoint between the lower link free ends offset with respect to the tractor body, a top link mounting being attached to a rear portion of the transmission case and positioned closer to one side thereof toward the midpoint.

4,211,299

PARKING APPARATUS FOR LATERALLY SHIFTING A VEHICLE

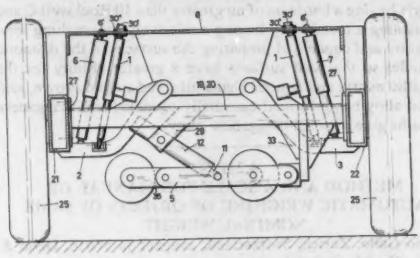
Juergen Schulte, Herrlinghausen 56, 5632 Wermelskirchen 1, Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 912,039

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805635

Int. Cl.² B60S *9/00*

U.S. Cl. 180—200 **9 Claims**



1. An apparatus for shifting an automobile substantially at right angles relative to its longitudinal axis, especially for parking a vehicle having chassis means, floating rear axle means and longitudinally extending frame members as well as shock absorber means arranged between said chassis means and said floating rear axle means for cooperation with said floating rear axle means, comprising cross-piece means (35), auxiliary wheel means (36, 37) rotatably secured to said cross-piece means and oriented substantially at right angles to said longitudinal vehicle axis, transverse frame means (19, 20) rigidly secured to said frame members adjacent said rear axle means, support means for securing said cross-piece means to said transverse frame means, said support means comprising piston cylinder means, first journalling means tiltably securing said piston cylinder means to said transverse frame means and to said cross-piece means, second journalling means tiltably securing said cross-piece means to said transverse frame means, said piston cylinder means and said second journalling means being arranged to cross each other when said auxiliary wheels are lowered, said apparatus further comprising arresting means operatively connected in parallel to each shock absorber means between said chassis means and said floating rear axle means for temporarily neutralizing the function of said floating rear axle means and said shock absorber means when the latter are relieved of their normal load, said arresting means comprising pipe means, rod means operatively inserted in said pipe means for relative axial movement between said pipe means and said rod means, locking means including bolt means extending movable to extend through said pipe means and said rod means, said locking means comprising bushing means secured to said pipe means, said locking bolt means extending through said bushing means, hole means in said pipe means and in said rod means for cooperation with said locking bolt means in its locking position, and operating means connected to said locking bolt means for moving said locking bolt means into and out

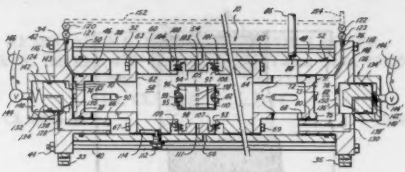
of a locking position relative to said pipe means and relative to said rod means.

4,211,300

AIR GUN WITH RECIPROCATING SHUTTLE

Adrian D. Miller, Galveston, Tex., assignor to Western Geophysical Co. of America, Houston, Tex.

Filed Jan. 22, 1979, Ser. No. 5,654
Int. Cl.[2] G01V 1/38
U.S. Cl. 181—120 **7 Claims**



1. In an improved air gun for use in underwater acoustic signalling, the air gun being of a type having an elongated housing for containing a volume of compressed air, and having at least one exhaust port, each end of the housing being closed by an end wall, a hollow shuttle type air-releasing means having opposite end faces and having an opening alignable with said exhaust port mounted concentrically within the housing to slide linearly from one end to the other of said housing, and means for introducing a volume of compressed air at a first pressure into said housing, the improvement comprising:

means for forming shuttle-actuation control chambers at each end of said housing between the respective shuttle end faces and a corresponding housing end wall, said shuttle-actuation control chambers being normally sealed from fluid communication with the interior of said housing;

a permanent air leak having a preselected air leakage rate in each said control chamber for maintaining the residual air pressure therein at a preselected second pressure substantially lower than said first pressure when said shuttle is at rest;

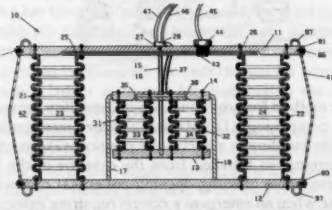
means for momentarily diverting some of the compressed air from inside said housing into one of said shuttle-actuation control chambers at one end of the housing in sufficient volume that the inrush of compressed air exceeds said air leakage rate from that chamber and drives said shuttle to the other end of said housing, releasing a jet of air when said opening passes said exhaust port.

4,211,301

MARINE SEISMIC TRANSDUCER

Joseph F. Mifsud, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Feb. 12, 1979, Ser. No. 11,341
Int. Cl.[2] G01V 1/38
U.S. Cl. 181—120 **12 Claims**



1. An apparatus for imparting seismic energy into a body of water comprising:

two transducer plates spaced apart from each other;

a first bellows;

a second bellows;

means for connecting said first bellows between said two transducer plates so that expansion of said first bellows pushes said two transducer plates apart; and

means for connecting said second bellows to said two transducer plates so that expansion of said second bellows pulls said two transducer plates towards each other;

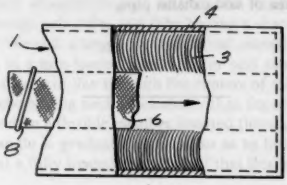
means for alternately applying pressure to said first and second bellows such that said two transducer plates reciprocate with respect to each other.

4,211,302

SOUND ABSORBING DEVICE

Carl Matthews, 102 Gloucester Rd., and Elizabeth de Recourt Martyn, 37, Stanhope Gardens, both of London, England

Continuation-in-part of Ser. No. 763,547, Jan. 28, 1977, abandoned. This application Mar. 22, 1978, Ser. No. 888,871
Claims priority, application United Kingdom, Feb. 3, 1976, 4258/76
Int. Cl.[2] F01N 1/24
U.S. Cl. 181—248 **12 Claims**



1. A device for absorbing acoustic energy from a moving fluid stream, said device comprising:

a conduit having an interior surface,

a plurality of flexible uni-directional, closely woven fibers operatively attached at one end thereof to said conduit interior surface the free ends of said fibers extending generally inwardly from said conduit interior, so that the free ends of said fibers define a generally regular geometrical surface, and

a liner of closely-woven textile-like acoustically transmitting material in contact with but not secured to the free ends of said flexible fibers defining an unobstructed fluid flow passage.

4,211,303

SOUND ABSORBING DEVICE

Carl Matthews, 102 Gloucester Rd., and Elizabeth de Recourt Martyn, 37, Stanhope Gardens, both of London, England

Continuation-in-part of Ser. No. 763,547, Jan. 28, 1977, abandoned. This application Mar. 22, 1978, Ser. No. 888,872
Claims priority, application United Kingdom, Feb. 3, 1976, 4258/76; Apr. 28, 1977, 17796/77
The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.
Int. Cl.[2] F01N 1/24
U.S. Cl. 181—248 **13 Claims**

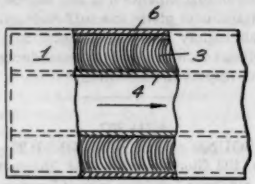
1. An exhaust system for an internal combustion engine comprising:

an exhaust pipe,

conduit means operatively attached to said exhaust pipe for effectively absorbing the acoustic energy of fluid flowing through said exhaust pipe while allowing passage of the fluid therethrough so that negligible back pressure is provided under operating conditions, said conduit means having an inner and outer surface,

said means comprising an inner liner of closely-woven tex-

tile-like acoustically transmitting material defining a fluid passageway having an inlet and an outlet therein disposed within said conduit and in line with said exhaust pipe, said liner provided with a plurality of fibers operatively attached to the outside surface of said inner liner and having the free ends of said fibers extending from said inner liner



to which they are attached to the inner surface of said conduit, so that the free ends of said fibers are substantially parallel to, in operative contact with and flexibly engage the inner surface of said conduit means, said liner of generally the same cross-sectional area as the cross-sectional area of said exhaust pipe.

4,211,304

SOUND ABSORBING DEVICE

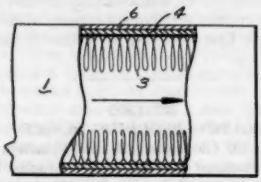
Carl Matthews, 102 Gloucester Road, and Elizabeth de Recourt Martyn, 37, Stanhope Gardens, both of London, England

Continuation-in-part of Ser. No. 763,547, Jan. 28, 1977, abandoned. This application Mar. 22, 1978, Ser. No. 888,874

Claims priority, application United Kingdom, Feb. 3, 1976, 4258/76; Mar. 13, 1978, 9918/78

Int. Cl.² F01N *1/24*

U.S. Cl. 181—248 **16 Claims**



1. A device for absorbing acoustic energy from a moving fluid stream, said device comprising:

a conduit having an interior surface,

means for absorbing acoustic energy from fluid stream flowing through said conduit without providing substantial surface resistance to the fluid flow, said means comprising

a plurality of flexible fiber loops, each such loop having a fixed end thereof operatively attached to a backing and, in turn to at least a portion of said conduit interior surface, and having a free end portion thereof extending inwardly from the conduit interior surface while extending parallel to and trailing in the fluid stream, said free end portions defining a generally regular geometrical surface therein providing an unobstructed fluid flow passage within said conduit.

4,211,305

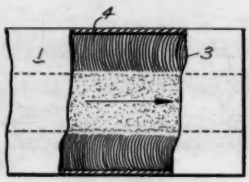
SOUND ABSORBING DEVICE

Carl Matthews, 102 Gloucester Rd., and Elizabeth de Recourt Martyn, 37, Stanhope Gardens, both of, London, England

Continuation-in-part of Ser. No. 763,547, Jan. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 888,873, Mar. 22, 1978, abandoned. This application Nov. 9, 1978, Ser. No. 959,365

Int. Cl.² F01N *1/24*

U.S. Cl. 181—248 **16 Claims**



1. A device for absorbing acoustic energy from a moving fluid stream, said device comprising:

a conduit having an interior surface, and

a plurality of flexible, unidirectional closely spaced fibers operatively attached at one end thereof to said conduit interior surface, the free ends of said fibers extending generally inwardly from said conduit interior and into the moving fluid stream, said free ends extending generally parallel to and in the direction of fluid flow in said conduit so that the moving fluid stream impinges upon said free ends of said flexible fibers and that the free ends of said fibers define a generally regular geometrical surface providing an unobstructed fluid flow passage.

4,211,306

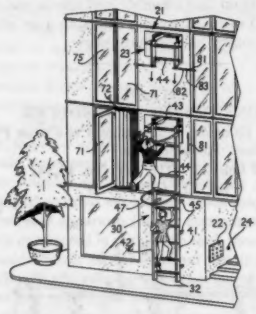
EMERGENCY BUILDING ESCAPE LADDER

Robert Brenner, P.O. Box 4837, Incline Village, Nev. 89450, assignor to Robert Brenner and Margaret A. Brenner, both of Crystal Bay, Nev.

Filed Aug. 10, 1976, Ser. No. 713,138

Int. Cl.² E06C *9/14*

U.S. Cl. 182—76 **7 Claims**



1. The method for providing escape capability for multistory building comprising: (1) installing a ladder intermediate each floor of the building in a horizontal position; (2) covering each ladder segment so installed from the exterior of the building with a removable building opening cover; (3) removing each said cover when an emergency occurs requiring exterior building exit; (4) extending each stored ladder segment sequentially so that the lower segment is fully extended prior to the segment above it being fully extended; (5) fully extending each

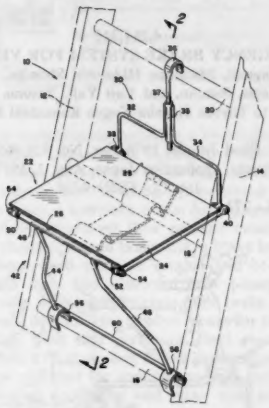
subsequent higher ladder and causing the same to interlock with the lower previously extended segment; (6) causing an exit to be opened adjacent the ladder for each floor of the building; and, (7) removing the ladder from the exterior of the building when an emergency situation has been completed.

4,211,307

REMOVABLE STEP OR SHELF FOR LADDER

Frank W. Ethridge, 4737 S. Harvard,#B, Tulsa, Okla. 74135

Filed Mar. 5, 1979, Ser. No. 17,349
Int. Cl.[2] E06C *7/16, 7/14*
U.S. Cl. 182—121 **4 Claims**



1. For use with a ladder having opposed side rails and spaced apart rungs extending between the side rails, a removable shelf comprising:

a base member of length less than the spacing between the ladder side rails, the base member providing a flat upper surface, the width being sufficient to afford a step, seat or shelf, the base portion having a forward edge and a rearward edge;

an upward extending hanger member having an upper end and a lower end, the lower end being pivotally attached to said base member adjacent the rearward edge thereof, the upper end having a hook portion for removably and pivotally engaging a ladder rung;

a downwardly extending support member having an upper end and a lower end, the upper end being pivotally attached to said base member adjacent the forward edge thereof, the lower end having means for removably and pivotally engaging and ladder rung; and

a retaining bar having a forward end and a rearward end, the bar being pivotally attached below the base member and adjacent the rearward edge thereof, the retaining bar having means intermediate the ends thereof for removably engaging a ladder rung and for disengaging the ladder rung when the forward end is upwardly pivoted,

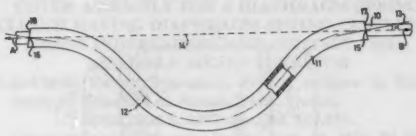
the apparatus being dimensioned whereby the base member may be supported immediately above a ladder rung with the upper end of the hanger member attached to the next adjacent upper ladder rung and lower end of the support member attached to the next adjacent lower ring, said support bar serving to retain the base member in at least one preselected position relative to the rung immediately below it.

4,211,308

DEVICE FOR ABSORBING TENSION LOADS IN AN ELONGATE FLEXIBLE MEMBER

Tom C. Reuterskiöld, stra Kyrkogatar 51, S-593 00 Västervik, Sweden

Filed Nov. 8, 1978, Ser. No. 958,740
Int. Cl.[2] F16F *7/12*
U.S. Cl. 188—1 C **7 Claims**



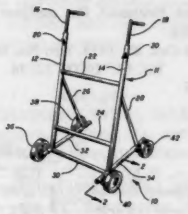
1. A device for absorbing tension loads in an elongate flexible member, said device comprising a bent tube having a curved central axis, said tube having free end portions which are generally directed away from each other, said tube having an inner diameter wide enough to allow a flexible member to be run through said tube, said tube being elastically deformable so as to resist straightening of a tensioned flexible member inserted through said tube, said tube having a shape such that at each said free end, a tangent to the curved central axis of said tube forms, in a non-loaded condition for said tube, an acute angle with a straight line through the centers of said tube free ends, said tube having such an elasticity that, for an increasing tensional load on a flexible member inserted through said tube, said acute angle is gradually reduced so as to become essentially zero at a fully loaded condition of that flexible member.

4,211,309

INVALID WALKER WITH IMPROVED BRAKE MEANS

Anthony M. Ruggiero, 1338 67th St., Brooklyn, N.Y. 11319

Filed Apr. 12, 1978, Ser. No. 895,548
Int. Cl.[2] F16D *63/00*
U.S. Cl. 188—83 **4 Claims**

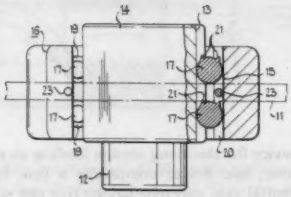


1. A walker device for assisting an invalid comprising a substantially upright portion and a carriage portion, means to mutually support said upright portion and said carriage portion, a plurality of wheel means, said wheel means spaced to stablely support said walker, brake means, said brake means including brake drum means, said brake drum means operatively associated with each said wheel means, said brake means including brake band means, said brake band means including a brake lining, said brake band means and brake lining adapted to substantially surround said brake drum means, spring tensioning means, said spring tensioning means being resilient and adapted to continuously tension said brake band means with said brake lining in contact with said brake drum means allowing slippage whereby said walker may move with said brakes on, and individual means to adjust each said spring tensioning means whereby said walker may be adjusted to the needs of an individual.

4,211,310
SPOT-TYPE DISC BRAKE

Hans-Henning Lüpertz, Darmstadt, Fed. Rep. of Germany, assignor to ITT Industries, Incorporated, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 964,862
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757392
Int. Cl.[2] F16D *65/224*
U.S. Cl. 188—73.3 10 Claims

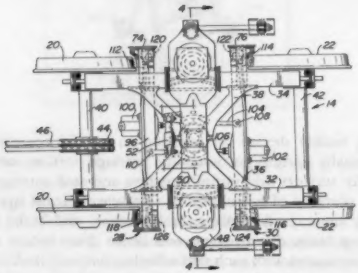


1. A spot-type disc brake comprising:
a caliper straddling a brake disc, said caliper being actuated by an actuating device to directly control one brake shoe disposed on one side of said disc and another brake shoe disposed on the other side of said disc;
a caliper carrier rigidly mounted to a brake carrier, said caliper carrier having a pair of oppositely disposed guiding surfaces each adjacent one of a pair of oppositely disposed front surfaces of said caliper; and
a pair of rollers disposed between each of said pair of guiding surfaces and said pair of front surfaces for axially, slidably guiding said caliper relative to said caliper carrier, each of said rollers having a longitudinal axis parallel to said disc and perpendicular to an imaginary line interconnecting said pair of front surfaces.

4,211,311
RAILWAY CAR TRUCK AND BRAKE SUPPORT STRUCTURE

John C. McMullen, Broomall, Pa., assignor to The Budd Company, Troy, Mich.

Filed Oct. 25, 1978, Ser. No. 954,344
Int. Cl.[2] B61H *13/36*
U.S. Cl. 188—209 10 Claims

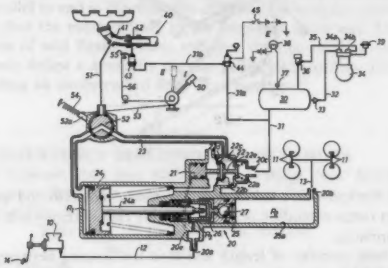


1. A railway car truck for supporting a pair of brake units for front and rear sets of wheels comprising:
a. a pair of side frames,
b. a pair of front and rear brake beam guide support assemblies disposed between said sets of wheels and connected to said side frames to support said pair of brake units,
c. each of said brake beam guide support assemblies including a main tubular member fixedly secured at one end to said sideframes of said truck with a plate secured to its free end,
d. a separate second plate attachable to each of said plates in a first position to accommodate a first given wheel size, said second plates being constructed and arranged such that they can be movable to a second position to accommodate a wheel size different from said first wheel size, and
e. angle guide members detachably mounted to each of said second plates to receive and guide the movements of said brake units.

4,211,312
EMERGENCY BRAKE SYSTEM FOR VEHICLES

Takahiro Nogami, Mishima; Hidetoshi Shimizu, Susono; Mitsuyuki Horie, Susono, and Yuji Yaji, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 28, 1978, Ser. No. 928,865
Claims priority, application Japan, Aug. 2, 1977, 52-92732
Int. Cl.[2] F02D *9/06*
U.S. Cl. 188—273 4 Claims

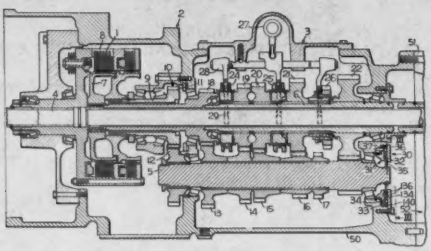


1. An emergency brake system for a vehicle having a brake booster to increase braking pressure applied to wheel brake cylinders from a master cylinder, said brake booster including a servo-chamber and a power piston operated by pneumatic pressure applied to said servo-chamber from a source of pneumatic pressure in response to operation of said master cylinder; the system comprising:
a manual shift lever arranged to be normally held in a first position and emergently shifted to a second position from the first position;
a cut-off valve provided within an exhaust pipe of an internal combustion engine for said vehicle and operatively connected to said shift lever, said cut-off valve being normally opened when said shift lever is in the first position and being closed upon shifting of said shift lever to the second position from the first position to create back pressure acting on said engine;
a communication passage connecting said servo-chamber of said brake booster to an upstream of said cut-off valve; and
a selector valve disposed within said communication passage to normally provide fluid communication between said pneumatic pressure source and said servo-chamber, said selector valve being switched-over upon shifting of said shift lever to the second position from the first position to apply the back pressure from said exhaust pipe into said servo-chamber through said communication passage.

4,211,313
TRANSMISSION BRAKE WITH LUBRICATING AND COOLING MEANS

David C. Quick, New Berlin, and James E. Marsch, Brookfield, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 22, 1977, Ser. No. 863,451
Int. Cl.[2] B60K *41/20*; F16D *65/82*
U.S. Cl. 192—4 A 10 Claims

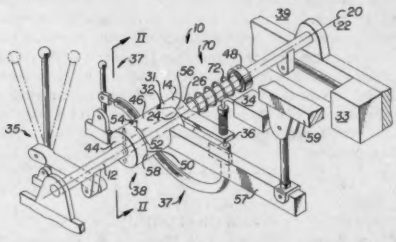


1. A vehicle transmission including a hydraulic brake comprising, a vehicle transmission including a driving shaft, a transmission brake including a brake disk connected to said shaft, a hydraulic actuator defining a pressurizing chamber for actuating the brake, a hydraulic piston for engaging said brake disk and defining restricted flow passage means from said pressurizing chamber to said brake disk, a brake housing defining a peripheral fluid chamber around said brake disk for receiving fluid from said restricted flow passage means, a reaction plate for frictionally engaging said brake disk, friction material on said disk defining groove means for radial flow of hydraulic fluid from said peripheral fluid chamber during brake actuation, a fluid venting means in communication with the peripheral chamber for venting the fluid from said brake thereby providing cooling of said brake with actuating fluid when said brake is actuated.

4,211,314
INTERLOCK MECHANISM

Frank L. Clason, Newbury, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Dec. 14, 1978, Ser. No. 5,637
Int. Cl.[2] B60K *41/26*; F16D *67/00*
U.S. Cl. 192—4 A 14 Claims



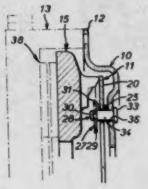
1. In a rotating assembly (**10**) having a first member (**12**) having an axis of rotation (**20**) and being rotatable between first and second positions (**16,18**), a second annular member (**14**) having an axis of rotation (**22**) and first and second ends (**24,26**) and being positioned about the first member (**12**), said second annular member (**14**) being rotatable between first and second positions (**28,30**) relative to the first member (**12**), the improvement comprising:

first means (**38**) for maintaining the first member (**12**) against rotation and freeing the second annular member (**14**) for rotation at a first position (**40**) of said first means (**38**) and freeing the first member (**12**) for rotation and maintaining the second annular member (**14**) against rotation at a second position (**42**) of said first means (**38**) for selectively interlocking the first member (**12**) relative to the second annular member (**14**).

4,211,315
COVER ASSEMBLY FOR A DIAPHRAGM SPRING CLUTCH HAVING DIAPHRAGM SPRING CENTERING MEANS INDEPENDENT AND DISTINCT FROM ASSEMBLY MEANS THEREFOR

Jean-Claude Fénart, Fourqueux, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Nov. 1, 1977, Ser. No. 847,599
Claims priority, application France, Nov. 12, 1976, 76 34089
Int. Cl.[2] F16D *13/71*
U.S. Cl. 192—70.27 7 Claims



1. A cover assembly for a diaphragm spring clutch comprising a diaphragm spring including an outer Belleville washer-like peripheral portion and a central portion having radial fingers, and an annular cover member assembly means for rockably mounting the diaphragm spring on said cover member, and a plurality of centering studs for radially centering the diaphragm spring with respect to the axis of the cover assembly, a corresponding plurality of apertures in said diaphragm spring; said centering studs being independent and distinct from said assembly means, rigidly fixed to said cover member, and extending from said cover member parallel to the axis of the cover member assembly into said corresponding plurality of said diaphragm spring apertures.

4,211,316
CHUTE FOR CHARGING STEEL MAKING VESSELS

Nicholas M. Rymarchyk, Wexford, Pa., and Charles T. Smith, New Buffalo, Mich., assignors to Pullman Berry Company, Harmony, Pa.

Filed Dec. 28, 1978, Ser. No. 973,828
Int. Cl.[2] B65G *11/00*
U.S. Cl. 193—2 R 10 Claims

1. A chute for conveying materials into a vessel containing a molten bath including a first tubular chute portion having a material receiving opening, the improvement of a liquid cooled second chute communicating with said first chute comprising,

a first upper pipe assembly including first and second concentric upper pipes,

said second concentric upper pipe being positioned within said first upper pipe and providing an annular first water inlet chamber,

water inlet connection for said first inlet chamber,

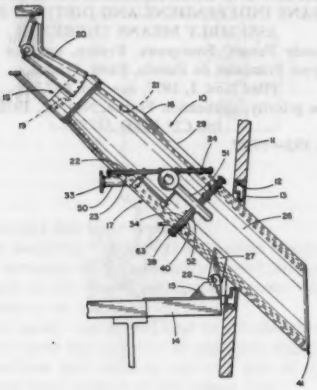
a second lower pipe assembly including first, second and third concentric lower pipes,

said second lower pipe being positioned within said first lower pipe and said third lower pipe being positioned intermediate said first and second lower pipes and providing with said second lower pipe a second water inlet chamber communicating with said first water inlet chamber and providing with said first lower pipe a water outlet

chamber isolated at its upper ends from said water inlet chamber,

an annular tip portion connected to the lower ends of said first and second lower pipes,

said intermediate third pipe having a lower portion thereat spaced from said tip providing communication between said second water inlet chamber and said water outlet chamber and providing a tip coolant chamber proximate to the tip,



a tip coolant injection pipe positioned between said first and second pipes, said injection pipe having an upper water inlet connection and a lower outlet end portion opening to said tip coolant chamber,

a water outlet connection connected to said water outlet chamber, and

coupling means releasably connecting said first and second pipe assemblies.

4,211,317

COIN CHUTE

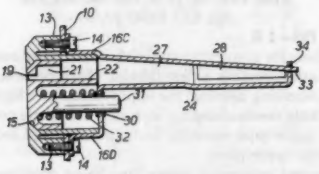
Robert D. Bellis, Delph near Oldham, England, assignor to Coin Controls Limited, Royton, England

Filed Sep. 9, 1977, Ser. No. 831,854

Claims priority, application United Kingdom, Oct. 7, 1976, 41780/76

Int. Cl.[2] G07F *1/02*

U.S. Cl. 194—1 D **6 Claims**



1. Coin feeding means for feeding a coin to coin-validating means (50) operable to a first condition upon the receipt of a valid coin, said coin-validating means including reject means (51) for ejecting a coin retained in said coin-validating means, comprising

(a) a hollow body member (11) adapted for connection adjacent said coin-validating means, said body member including wall portions (16A, 16B) defining a guide tunnel (17);

(b) a coin-receiving member (18) containing a coin entry slot (19) extending longitudinally therethrough, said coin-receiving member being slidably mounted for longitudinal reciprocation in said tunnel; and

(c) resilient means (32) biasing said coin-receiving member toward a first position relative to said body member;

(d) said coin-receiving member including a projecting portion (31) for operating said reject means when said coin-receiving member is displaced against the biasing force of said resilient means toward a second position relative to said body member.

4,211,318

PLATE WITH TILTED REVERSAL HEADS FOR A DEVICE FOR ORIENTATING CIGARETTES

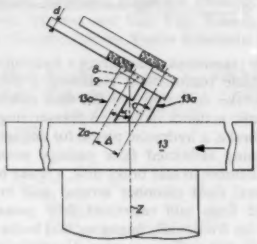
Jean Verjux, Pavillons sous Bois, France, assignor to Arenco-Decoufle, Societe Anonyme, Paris, France

Continuation of Ser. No. 838,477, Oct. 3, 1977, abandoned. This application Feb. 14, 1979, Ser. No. 12,113

Claims priority, application France, Oct. 20, 1976, 76 31502

Int. Cl.[2] B65G *29/00, 47/24*

U.S. Cl. 198—377 **9 Claims**



1. A rotatable plate for orienting cylindrical objects such as cigarettes and adapted to cooperate with a drum rotatable about an axis perpendicular to the rotational axis of the plate for taking up said objects from a first channel portion of said drum and placing said objects after orientation in a second channel portion of said drum, said taking up and placing of said objects being carried out substantially simultaneously, said plate comprising reversal heads mounted on said plate, each reversal head comprising a shaft having an integral tip provided with two apertures opening into two recesses, said shaft having two slots and rotatable in a spreader mounted in a support in which two passages are provided for the intake of suction air, means for rotating said plate, and means for rotating said reversal heads such that they effect a half revolution while the plate effects a complete revolution in an opposite direction, each of the reversal heads effecting no other movement but its rotation in relation to said plate and being rotatable about an axis fixed in relation to said plate and forming with the rotational axis of the plate an angle whose tangent is greater than the ratio of the diameter of the objects to be oriented to the distance separating the rotational axes of two adjacent reversal heads.

4,211,319

OVEN UNLOADER

W. Clark Pulver, Burbank, Ill.; Maynard R. Euverard, Williamsburg, Va.; Henry A. Heide, Addison, and Ronald P. Ziolkowski, South Holland, both of Ill., assignors to Velten & Pulver, Inc., Chicago Ridge, Ill.

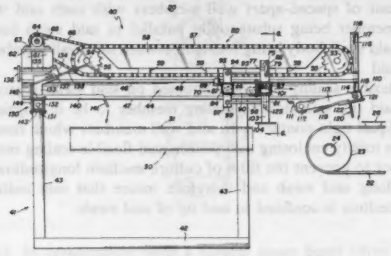
Filed Oct. 20, 1977, Ser. No. 843,979

Int. Cl.[2] B65G *47/26*

U.S. Cl. 198—432 **10 Claims**

1. Apparatus for transferring elongated rows of articles from a transfer station along a continuously moving infeed conveyor to a depositing station spaced from the infeed conveyor, said apparatus comprising an endless transfer conveyor traveling between said transfer station and said depositing station,

pickup means carried by said transfer conveyor and engageable with a row of articles at the transfer station for lifting the entire row of articles from the infeed conveyor and carrying it in a level upright condition to the depositing station, unloading mechanism at the depositing station movable between a pass position out of the path of the articles carried by said transfer conveyor and an unloading position disposed in the path of the articles carried by said transfer conveyor for engagement therewith, control means coupled to said unloading mechanism and responsive to movement of said pickup means to the



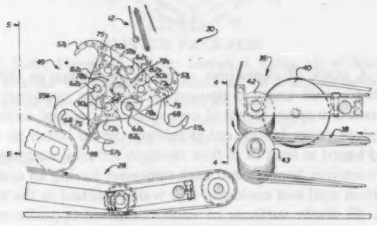
depositing station for moving said unloading mechanism to the unloading position thereof for engagement with the row of articles carried by said pickup means and for cooperation with said pickup means to insure removal of the row of articles therefrom, said control means being responsive to movement of said pickup means from the depositing station for moving said unloading mechanism to the pass position thereof, and means for synchronizing the operation of said transfer conveyor with that of the infeed conveyor so that said pickup means and the row of articles to be picked up thereby arrive essentially simultaneously at the transfer station.

4,211,320

APPARATUS FOR COMBINING SHEET MATERIAL ASSEMBLAGES

Michael S. Yautz, Jr., Easton, and Richard N. Winslow, Media, both of Pa., assignors to Harris Corporation, Cleveland, Ohio

Filed Jun. 26, 1978, Ser. No. 919,440
Int. Cl.² B65G *47/68*
U.S. Cl. 198—450 **7 Claims**



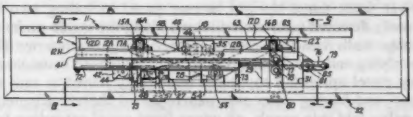
1. Apparatus for combining separate streams of sheet material assemblages into a single stream comprising a rotatable wheel, a plurality of first and second guide means spaced about the periphery of said wheel, said second guide means being movable relative to said first guide means, each of said first guide means receiving assemblages from a first stream at a first angular position in the path of said wheel and guiding said assemblages to a release station at a second angular position in the path of said wheel, each of said second guide means receiving assemblages from a second stream at a third angular position in the path of said wheel and guiding said assemblages to said release station, first means adjacent said rotatable wheel for feeding assemblages to said first guide means, second means adjacent said rotatable wheel for feeding assemblages to said second guide means, means at said release station for receiving assemblages alternately from said first and second guide means, and means for pivoting each of said second guide means between two peripherally adjacent a first position where said second guide means extends between said first guide means for receiving assemblages from said second stream and a second position where said second guide means is positioned more closely to the adjacent upstream first guide means to provide a clear path for an adjacent downstream first guide means to receive an assemblage from said first stream.

4,211,321

COMPACT LOW FORCE ECONOMICAL GENERAL PURPOSE WALKING BEAM CONVEYOR

Ralph S. Mosher, Elnora, N.Y., assignor to Robotics, Inc., Ballston Spa, N.Y.

Filed Apr. 26, 1978, Ser. No. 900,297
Int. Cl.² B65G *25/00*
U.S. Cl. 198—774 **23 Claims**



1. A walking beam conveyor comprising:

(a) a supporting truss and walking beam member for transporting loads in a straight-line path between two points comprising pick-up and discharge stations for the load:

(b) said supporting truss and walking beam member comprising first and second orthogonally arrayed interconnected supporting truss arms:

(c) said first and second truss arms each including guide means thereon extending along the longitudinal axis of the truss arms;

(d) first and second guide means engaging devices for engaging the guide means on said first and second truss arms, respectively, and for physically supporting and moving said supporting truss and walking beam member along two orthogonal axes of movement;

(e) first and second rotatable crank arm means having said first and second guide means engaging devices secured to respective ends thereof for driving said guide means engaging devices;

(f) first and second intermittor drive means;

(g) means interconnecting the output of said first and second intermittor drive means with said first and second rotatable crank arm means, respectively, for intermittently rotating the respective first and second crank arm means in a predetermined intermittent manner;

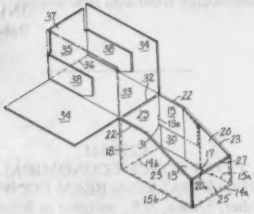
(h) base frame means supporting said intermittor drive means and said first and second crank arm means together with their respective interconnecting means and guide means engaging devices which in turn physically and movably support the supporting truss and walking beam member in a compact structure; and

(i) spring biased counter-balancing means mounted on said base frame means and including a spring actuated lever arm and counter torque coupling means for applying a counter-balancing torque to at least one of the rotatable crank arm means to assist the same in developing a load supporting force and thereby minimize the forces demanded of the intermittor drive means.

4,211,322
SELF-JOINED INTERLOCKING CONTAINER

Donald Crescenzi, Killingworth, and Barry A. Bridges, Bloomfield, both of Conn., assignors to Leigh Products, Inc., Coopersville, Mich.

Filed Nov. 20, 1978, Ser. No. 962,372
Int. Cl.[2] B65D 5/22
U.S. Cl. 206—44 R 6 Claims

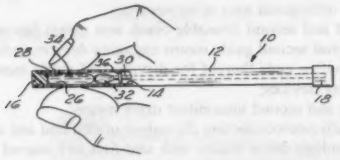


1. A self-joined interlocking container comprising a base panel, two side panels extending upwardly from the base panel, each including an inwardly directed tab along the front thereof, a lower front panel including a flap overlying and locking with said side panel tabs to hold the side panels and lower front panel upright, a rear panel including two forwardly directed tabs, each directed along the inside surface of a side wall, said side panels further including interior flaps overlying and interlocking said rear panel tabs to maintain said rear panel upright, a top panel removably joined to said rear panel and having outer side panels joined thereto adapted to overlay said side panels, an upper front panel extending from said top panel, said upper front panel including side tabs each adapted to be folded rearwardly between a side panel and an outer side panel and a front tab adapted to lie rearwardly of the lower front panel.

4,211,323
DISPOSABLE DIAGNOSTIC SWAB HAVING A STORED CULTURE MEDIUM

C. Eric Olsen, Ventura, Calif., assignor to California Medical Developments, Inc., Ventura, Calif.

Filed Dec. 1, 1978, Ser. No. 965,564
Int. Cl.[2] A61B 10/00, 25/00
U.S. Cl. 206—210 2 Claims



1. A disposable diagnostic swab having a stored culture medium comprising:

an elongated tubular member having an internal chamber, said chamber having an inner end and an outer end, said inner end being permanently closed, said outer end being normally closed by a removable cap, the wall of said elongated tubular member being substantially rigid but readily deflectable upon incurring a small amount of localized manual pressure;

a pouch completely enclosing a quantity of culture medium, the wall of said pouch being constructed of a thin readily breakable material upon incurring a small amount of manual pressure, said pouch being located within said internal chamber at said inner end;

a swab having a tip and and an aft end interconnected by an elongated swab body, said swab located within said internal chamber with said aft end located at said outer end and said tip located directly adjacent said pouch, whereby said pouch may be ruptured causing immersion of said tip by said culture medium;

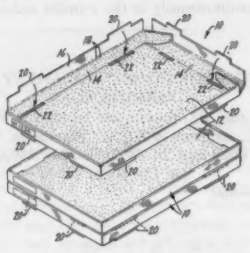
said internal chamber including an internal separating wall assembly to closely confine said swab, a portion of said internal separating wall assembly cooperating with said tubular member to substantially totally enclose said pouch, said internal separating wall assembly including a pair of spaced-apart wall members with each said wall member being substantially parallel to said swab body, said swab body being located between said wall members; and

a flexible sealing member mounted on said swab adjacent said tip, said flexible sealing member to be in physical, liquid tight contact with said wall members which results in totally enclosing said pouch, said flexible sealing member to prevent the flow of culture medium longitudinally along said swab and therefore insure that said culture medium is confined to said tip of said swab.

4,211,324
ASSEMBLY PROTECTING AND INVENTORYING PRINTED CIRCUIT BOARDS

Ralph C. Ohlbach, 417 Green Park Ct., Deerfield, Ill. 60015

Filed Aug. 7, 1978, Ser. No. 931,866
Int. Cl.[2] B65D 85/00, 85/42
U.S. Cl. 206—328 6 Claims



1. A stack of containers each encompassing at least one printed circuit board contained therein, one container being supported atop an identical container constructed entirely of one-piece paper board, either folding carton board or corrugated board at least of E-flute strength for minimum strength, said container beneath and each container having an open top, a bottom wall and enclosing side walls attached to the bottom wall, all inside surfaces of each container opposite outside surfaces thereof being coated with conductive carbon black particles contained in a printing ink vehicle for capturing a static electricity charge originating outside the container.

3. A method of inventorying printed circuit boards susceptible to being ruined by a discharge of static electricity and comprising: placing individual printed circuit boards each in a container having an open top, a bottom wall and enclosing side walls attached to the bottom wall, each container being constructed of paper board with all inside surfaces thereof opposite outside surfaces being coated with conductive carbon black particles contained in a printing ink vehicle for capturing a static electricity charge originating outside the container, stacking one container containing a printed circuit board atop another which contains a printed circuit board, and topping off the stack with a cover.

4,211,325

HEART VALVE HOLDER

John T. M. Wright, Huntington Beach, Calif., assignor to Hancock Laboratories, Inc., Anaheim, Calif.

Filed Jun. 7, 1979, Ser. No. 46,535
Int. Cl.[2] B65D *85/50, 85/02, 81/24*
U.S. Cl. 206—438 17 Claims

11. In combination with a natural tissue heart valve stent assembly including an external sewing ring, commissure support struts and a peripheral surface between said sewing ring and said support struts, a device for holding said heart valve stent assembly comprising

a valve support ring member circumscribing said valve assembly and engaging said stent about said peripheral surface;

an outer case comprising an open-ended cylinder having integral internal support means adapted to support said valve support ring and valve assembly; and

a retainer secured within said outer case and engaging said valve support ring;

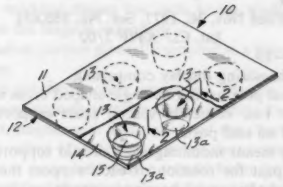
whereby said valve support ring and said valve assembly are immobily retained within said outer case between said retainer and said internal support means of said case.

4,211,326

BLISTER PACKAGE

Carl C. Heiu; Harold K. Silver; Joseph J. Spitz, all of Neenah, and Donald W. Seidler, Appleton, all of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 10, 1978, Ser. No. 950,077
Int. Cl.[2] B65D *83/04*
U.S. Cl. 206—484 14 Claims



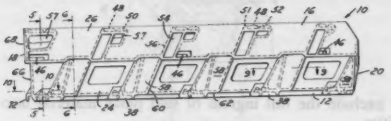
1. Thermoformable laminate package structure adapted for blister packaging comprising: a first, outer lamina of polyvinyl chloride, an intermediate lamina of fluid compression rolled, partially oriented polymeric material, and a second, outer lamina of polyvinyl chloride.

4,211,327

STACK AND NEST CONTAINER

Edward L. Stahl, Richmond, Mich.; Ellsworth E. Sanders, Naples, Fla., and George C. Blair, Kansas City, Mo., assignors to Pinckney Molded Plastics, Inc., Pinckney, Mich.

Filed Jun. 29, 1978, Ser. No. 920,484
Int. Cl.[2] B65D *21/02*
U.S. Cl. 206—505 10 Claims



1. A stack and nest container having a bottom, side walls projecting upwardly from opposite side edges of said bottom, said side walls each having a lower section and an upper section spaced outwardly from said lower section joined thereto by a ledge, said upper wall sections being spaced apart sufficiently farther than said lower wall sections to permit said container to nest in a lower container of identical construction, said container having a plurality of feet spaced from one another along the outer side of the lower edge portion of the lower section of each side wall, said ledges having nesting saddle portions directly above said feet adapted to support the feet of an upper identical container nested therewith, and a plurality of stacking saddles directly above said feet along the inner side of the upper edge portion of the upper section of each side wall to support the feet of an upper identical container stacked thereon, said stacking saddles along each upper edge portion being spaced from one another sufficiently to clear the feet of an upper identical container for nesting, said side walls having guide means for guiding the feet of an identical container down to said nesting saddle portions, said guide means including upper ribs projecting inwardly from the inner surface of the upper section of each side wall, said upper ribs having upper ridges respectively extending downwardly from points adjacent the rear ends of certain of said stacking saddles to points adjacent the front ends of certain of said nesting saddle portions, said guide means also including lower ribs projecting outwardly from the outer surface of the lower section of each side wall, said lower ribs having lower ridges respectively extending upwardly from points adjacent the front ends of certain of said feet to points adjacent the front ends of certain of said nesting saddle portions, said upper ridges cooperating with the lower ridges of an identical upper container to guide the latter during movement thereof to a nesting position.

4,211,328

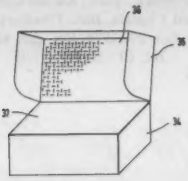
PACKAGE FOR SOLID OR PASTY GOODS

Pál I. Petranyi, Hamburg, Fed. Rep. of Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,634
Claims priority, application Netherlands, Feb. 7, 1978, 7801366
Int. Cl.[2] B65D *85/74*
U.S. Cl. 206—525 10 Claims

1. A package with pasty contents, comprising a container having an open top and a closure detachably covering said open top, said container being filled with a substantially solid, pasty material, said pasty material terminating with an upper surface at a prescribed level of and proximate said open top of said container, and a self-shape-sustaining flexible closure operatively associated with said container, said closure being impervious to air and said pasty material and including a plurality of ribs terminating in a plane and defining a pattern of independent and separate non-communicating cavities, with said closure closing said open top of said container said ribs being

engaged with said upper surface of said pasty material and cooperating with the latter to seal air in each of said cavities



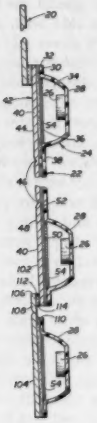
and exclude the full ingress of said pasty material into said cavities.

4,211,329

EXTENDER AND HEADER CARD FOR MEDICINAL DISPENSING DEVICE

Milton Braverman, Philadelphia, Pa.

Filed Apr. 27, 1979, Ser. No. 33,923
Int. Cl.[2] B65D *73/00, 83/04, 85/56*
U.S. Cl. 206—534 **9 Claims**



1. A header card for a medicinal dispensing device having a row of article holding units therein, each unit having flanges detachably connected along predetermined weakened lines so that each unit can be separated from other units, said card comprising a planar panel having a front face, a rear face, a lower edge and adhesive securement means disposed on the rear face contiguous with the lower edge, said panel including a transverse weakened line extending across the panel spaced from the lower edge and a plurality of longitudinal weakened lines extending parallel to one another from said edge to the transverse line to form a plurality of separable sections, the front face of said card including a first area for receipt of prescription indicia, said card being arranged for securement to said dispensing device with the adhesive securement means contacting portions of said row of units, which each of the sections of said card being disposed over a portion of the flange of a respective unit and with the weakened longitudinal lines of the card being aligned with the weakened flange lines.

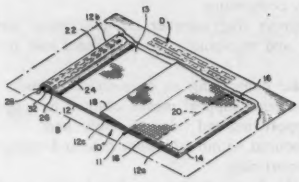
5. An extender for a medicinal dispensing device, said device including a plurality of article holding units, each having flanges detachably connected along predetermined weakened lines so that each unit can be separated from other units, a chamber for holding an article therein depending from each flange and having an opening for the chamber, a cover sheet having interesecting weakened lines corresponding to the flange lines and forming a plurality of closures sealing respective openings in said units, said extender including a row of article-holding units, each with flanges detachably connected along predetermined weakened lines so that each unit can be separated from the other units, a chamber for holding an article therein depending from each flange, and closure means in the form of plural closures, each being coextensive in size with a respective article holding unit and adapted to seal the opening in a said unit, said closures being formed by a cover sheet having an exterior surface and an interior surface having a adhesive thereon said cover sheet including plural weakened lines defining said closures and corresponding to the flange lines and including a tab portion extending beyond the flanges forming said row, said tab including a transversely extending weakened line contiguous with said flanges, and adhesive securement means on the interior surface thereof for securement to the exterior surface of the cover sheet of the medicinal dispensing device.

4,211,330

ORAL HEALTH AND HYGIENE KIT

Alvin E. Strock, 647 Commonwealth Ave., Newton Center, Mass. 02159

Filed Feb. 1, 1979, Ser. No. 8,612
Int. Cl.[2] A45B *15/00;* **A61C** *15/00*
U.S. Cl. 206—581 **6 Claims**



1. An oral health and hygiene kit including a periodontal massaging pad comprising a length of liquid pervious, flexible, textured material, means defining a pocket in said material length for engaging over a finger of a user, means defining an integral flap extending exteriorly of said pocket for gripping by a thumb to retain the pad on the finger during inserting and manipulation of said pad within the mouth of a user, said periodontal pad further including means defining an open ended receptacle in said integral flap and wherein said kit further includes means for removing food particles retained within said receptacle, said means for removing food particles comprises a length of dental floss and a rigid dental stimulator.

4,211,331

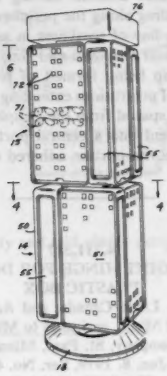
MERCHANDISING DISPLAY

Peter C. Salmon, and Christopher Kidd, both of Port Washington, N.Y., assignors to Consumer Promotions, Inc., White Plains, N.Y.

Filed Nov. 30, 1977, Ser. No. 855,651
Int. Cl.[2] A47F *5/02*
U.S. Cl. 211—13 **14 Claims**

1. A merchandising display comprising:
(a) a vertical post having an angle-shaped cross section,
(b) at least two vertically spaced apart support members mounted on said post,
(c) bearing means mounting each of said support members on said post for rotation of each support member in a horizontal plane, each bearing means being non-rotatably secured to said post and at least the lower of said bearing means being spaced from a surface of said post,
(d) a plurality of merchandise-holding cases carried by said support members in spaced relation to said post,
(e) an electric light fixture fixed to one of the flat surfaces of said angle-shaped post, and

(f) an electric wire from said light fixture extending along the length and externally of said post and through the



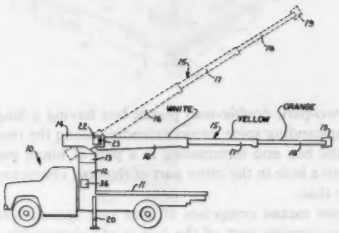
space between the lower of said bearing means and said post.

4,211,332

COLOR CODED BOOM AND CHART SYSTEM

Raymond F. Pitman, Johnson County, Kans., assignor to R O Corporation, Olathe, Kans.

Filed Apr. 3, 1978, Ser. No. 892,948
Int. Cl.[2] G01D *21/00*; B66C *13/14*
U.S. Cl. 212—157 **6 Claims**



1. In combination with a multiple stage boom mounted to pivot about a substantially horizontal axis and including a plurality of relatively extensible and retractable boom stages, the improvement comprising:

means marking the exteriors of said boom stages in a manner visibly distinguishing each stage from the other stages, said marking means for each boom stage being visible when the stage is extended:

a pendulem pointer pivotally secured to a boom glove of the boom;

a boom extension chart presenting thereon a plurality of separate arcuate sections corresponding to the respective boom stages, each said section of the chart providing by the position of said pointer, when the corresponding boom stage is extended relative to said boom glove, an indication of the effective horizontal moment arm length of said boom at various pivotal positions thereof; and

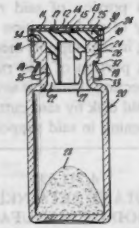
means marking each section of said boom extension chart in a manner correlated with the marking means of the corresponding boom stage, thereby facilitating location of the sections of said boom extension chart corresponding to the boom stages that are extended.

4,211,333

TAMPERPROOF CONTAINER

Miguel Villarejos, Clermont-Ferrand, France, assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 5, 1978, Ser. No. 912,792
Int. Cl.[2] B65D *47/36, 47/38, 41/50*
U.S. Cl. 215—249 **1 Claim**



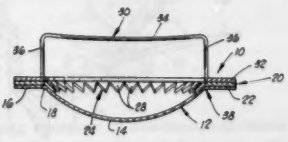
1. In an improved tamperproof package for biological material in lyophilized form comprising a container portion and a cap assembly, the container portion having an opening, a neck below the opening, in the neck a flange about the opening and a shoulder spaced apart from the flange to define therebetween a groove; the cap extending over the flange and about the neck to form a skirt, a portion of the skirt extending inwardly in gripping relation to the groove, said skirt having a plurality of ratchets attached to the wall of the skirt and extending upwardly and inwardly from said skirt whereby the overcap is limited in its removal by the flange and can only be removed with the destruction of the structural integrity of the package; the improvement consisting of a sealing stopper in the opening, and the stopper having a capping flange portion and a stem portion; the capping flange portion sealingly engaged with the flange of the container; the stopper having in the stem portion ventilation ribs so that when the capping flange is in spaced apart relation from the container flange, the ventilation ribs allowing fluid communication between the interior of the container and the exterior; the sealed portion of the skirt extending inwardly to engage the juncture of the groove and the container flange; the top of the cap engaging the capping flange in sealing relation; and a sealable opening in the cap for introducing a syringe needle therethrough to introduce reconstituting liquid and for withdrawing the biological material after reconstitution.

4,211,334

SAFETY PRESSURE RELIEF APPARATUS

John E. Witten; Loren E. Wood, and Edward H. Short, III, all of Tulsa, Okla., assignors to B S & B Safety Systems, Inc., Tulsa, Okla.

Continuation of Ser. No. 832,417, Sep. 12, 1977, Pat. No. 4,158,422. This application Nov. 24, 1978, Ser. No. 963,267
The portion of the term of this patent subsequent to Jun. 19, 1996, has been disclaimed.
Int. Cl.[2] F16K *17/40*
U.S. Cl. 220—89 A **4 Claims**



1. A safety pressure relief apparatus comprising:

a reverse buckling rupture disk including a concave-convex

portion connected to an annular flat flange portion by a curved transition connection; and

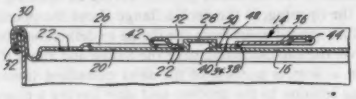
a thin support member having an annular flat flange portion attached to said annular flat flange portion of said rupture disk and for supporting said transition connection thereof, said support member including a serrated cutting edge, the serrations of which are inclined towards and into said concave-convex portion of said rupture disk and positioned interiorly of said transition connection forming a circular opening in said support member so that when said concave-convex portion of said rupture disk reverses, a circular center section thereof is severed from the remaining portion of said disk by said cutting edge which passes through said opening in said support member.

4,211,335

FRACTURE RESISTANT RETAINED LEVER TAB AND METHOD OF MANUFACTURE

Neal E. Langseder, Hoffman Estates, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Jun. 21, 1979, Ser. No. 50,649
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—259 **8 Claims**



1. An easy open closure for a container comprising:

(a) a central panel wall including a peripheral flange for joining said closure to said container and an integral rivet;

(b) a displaceable panel in said central panel wall disposed outwardly of said rivet and substantially defined by scoring; and

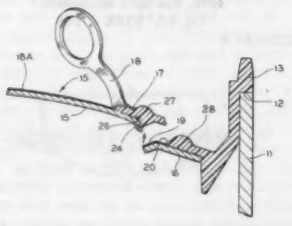
(c) a lever tab with a tab nose and a tab lift and a central web disposed therebetween and wherein said tab web is lanced to form a tongue with said tongue joined to said central panel wall by means of said rivet and wherein a portion of said tongue is coined to a maximum depth and wherein adjacent portions of said web are coined in transitional planes of graduated depth, whereby said tongue is cooperatively urged to bend in said portion of maximum coining when said tab is pivoted forward and subsequently rebent to a position of repose.

4,211,336

CONTAINER CLOSURE

Charles R. Helms, Collegeville, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Aug. 15, 1979, Ser. No. 66,577
Int. Cl.[2] B65D *41/32*
U.S. Cl. 220—270 **4 Claims**



1. A container closure for securement along a rim of a container body at an end thereof, said closure being characterized by a closure panel extending between said rim and closing an open end of said body, said closure panel comprising:

(a) a central panel element having a tear strip formed thereon extending along the periphery of said element;

(b) a fracturable line of weakness in said element disposed between said tear strip and said rim;

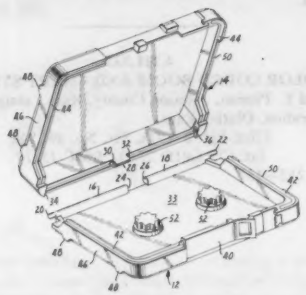
(c) said tear strip being formed of resinous material and having a line of protrusions extending through said central panel element spaced from the periphery thereof to separate said element into a central portion adhered to said tear strip and a rim portion adhered to said rim.

4,211,337

MULTIPLE-POINT HINGE FOR DOUBLE-WALL PLASTIC BOX

Mark W. Weavers, Little Canada, and Anthony W. Konkler, Lakeland, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 8, 1979, Ser. No. 47,346
Int. Cl.[2] B65D *43/14, 51/04*
U.S. Cl. 220—341 **4 Claims**



1. A two-part, double-wall plastic box having a hinge comprising upstanding spine means extending along the rear of one part of the box and terminating in a pair of hinge pins, each fitting into a hole in the other part of the box, characterized by a feature that:

the spine means comprises at least two spaced spines, the spine-carrying part of the box is of substantially normal double-wall thickness at the spacing between the spines, a projection from said other part fits into the spacing between said spines, and the adjacent ends of the projection and spines have mating convex and concave surfaces which provide additional hinge points and lateral stability.

4,211,338

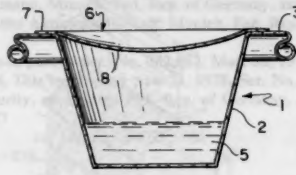
CONTAINER CLOSURE STRUCTURE

Robert F. Bublitz, Chester, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 37,036, May 8, 1979, abandoned. This application Jun. 11, 1979, Ser. No. 47,358
Int. Cl.[2] B65D *41/00*
U.S. Cl. 220—359 **16 Claims**

1. A container closure for use on a container body having a planer sealing surface comprising a flexible sheet material having a planer peripheral sealing portion and a shaped central portion, said shaped central portion being initially concave with respect to said container body onto which said closure is to be sealed and said shaped central portion being capable of being deformed under internal pressure within said container

body after sealing of said closure onto said container body without damage to the seal between said planer sealing surface



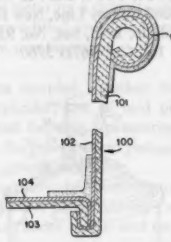
of said container body and said planer peripheral sealing portion of said closure.

4,211,339

LAMINATED PAPER CONTAINER WITH SEALED SEAMS

Tsutomu Itoh, Tokyo, Japan, assignor to Onoda Cement Co., Ltd., Onoda, Japan

Division of Ser. No. 858,738, Dec. 8, 1977, Pat. No. 4,168,676. This application Dec. 11, 1978, Ser. No. 967,988
Claims priority, application Japan, Dec. 13, 1976, 51-148728
Int. Cl.[2] B65D *3/04, 3/14*
U.S. Cl. 220—450 **2 Claims**



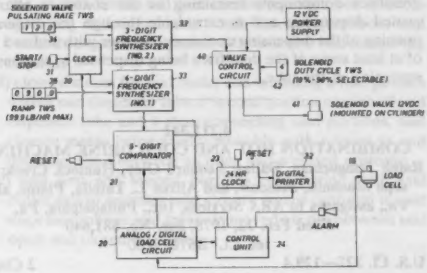
1. A paper container having sidewalls formed from a laminate material which material includes a lamina of paper and an inner lamina of non-porous material forming the inside surface of said container; said sidewalls having a sidewall seam where the edges of said laminate material are overlapped and bonded together, a bottom panel having a moisture impervious inner surface closing one end of said container; a folded seam joining said sidewalls and bottom, means for preventing contact between the contents of the container and the exposed edge of the paper lamina at said sidewall and folded seams, said means comprising: a strip-like layer of water impervious resin covering said sidewall seam on the inside of said container and bonded to said inner lamina; a layer of water impervious resin filling the channel between the sidewalls and bottom panel where they converge adjacent said folded seam and bonded to both said inner lamina of the sidewalls and the inner surface of said bottom; said layers, where said sidewall seam joins said folded seam, being bonded together to form an integral seal for said seams; the end of said container opposite said bottom being open, said sidewalls at said open end being rolled outwardly to form a lip; a layer of moisture impervious resin encasing said lip and sealing the edge of the laminate material forming the lip.

4,211,340

CATALYST REGENERATION

Julius J. Szakasits, Houston, and Thomas C. Wadham, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 21, 1978, Ser. No. 935,196
Int. Cl.[2] B67D *05/34*; B01J *37/24*
U.S. Cl. 222—3 **8 Claims**



1. A system for controlling the addition of small amounts of material to a process comprising:

a container for said material, said container being connected to said process to supply the material thereto;

weighing means disposed to weigh said container and material;

a valve means disposed in the connection between said container and said process to control the flow of material to said process; and,

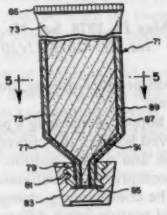
a control system, said control system being coupled to said weighing means and said valve means to intermittently open and close the valve means at a preselected modulation frequency to provide a controlled flow of said material to said process and further suspending operation of the valve means in response to sensing a predetermined change in weight of said container and material.

4,211,341

DISPENSING CONTAINER OF STABILIZED EXTRUDABLE DENTIFRICE CONTAINING NORMALLY CHEMICALLY REACTIVE COMPONENTS

Hendrik F. Weyn, Le Chesnay, France, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 714,736, Aug. 16, 1976, Pat. No. 4,098,435. This application Feb. 10, 1978, Ser. No. 876,709
The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.
Int. Cl.[2] B65D *35/22*
U.S. Cl. 222—94 **27 Claims**



1. A dispensing container of stabilized, extrudable cream, paste or gel dentifrice comprising at least two components which are normally reactive with each other and which are maintained separate from each other in the dispensing container during normal repeated uses of the dentifrice, which

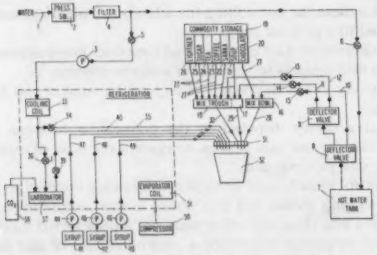
container is of a deformable or collapsible tube type, having a closable opening through which the dentifrice is pressure dispensable in response to squeezings of the tube, with the normally reactive components being dispensed together during initial and subsequent dispensings, and in which said components are maintained separate from each other until each dispensing or until shortly before such dispensings by a barrier of extrudable separating material between them, which separating material remains at least in part between the reactive dentifrice components remaining in the container after repeated dispensings and is extrudable through the dispensing opening of the dispensing container together with and as a part of at least some of the dentifrice being dispensed in response to squeezing of the tube.

4,211,342

COMBINATION HOT AND COLD DRINK MACHINE

Ralph Jamgochian, Dallas; Leonard Oley, Hunlock Creek; Joseph Stachnik, Moscow, and Alfred L. Tutella, Plains, all of Pa., assignors to ARA Services, Inc., Philadelphia, Pa.

Filed Feb. 22, 1978, Ser. No. 881,640
Int. Cl.[2] B67D *3/00*
U.S. Cl. 222—129.4 **2 Claims**



1. In a combination hot and cold beverage vending machine having a fixed total number of selectable beverages and at least one selector button, switching means for varying the numbers of hot beverage selections and cold beverage selections offered for sale by said machine, said switching means comprising at least one double pole double throw switch, said switch being operable from within the housing of said machine, said switch directing the signal from said selector button to motor means for vending the hot or cold beverage chosen by said selector button.

4,211,343

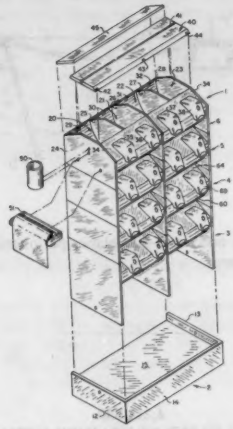
BULK DRY FOOD PRODUCT STORAGE, DISPLAY AND DISPENSING APPARATUS

Peter I. Hughes, 2501 Spring St., Redwood City, Calif. 94063; Robert J. Lynch, P.O. Box 1191, Santa Cruz, Calif. 95060, and James J. Ahrens, 26081 Mocine Ave., Hayward, Calif. 94544

Filed May 19, 1978, Ser. No. 907,547
Int. Cl.[2] G01F *11/10*
U.S. Cl. 222—130 **19 Claims**

1. A bulk dry food product storage, display and dispensing apparatus comprising:

means forming a hopper comprising a pair of side wall members and a curved bottom, the curved bottom comprising a front portion and a rear portion, the front and rear portions each comprising a continuously changing radius of curvature, the continuously changing radius of curvature of the front portion being different from the continuously changing radius of curvature of the rear portion whereby fresh product being added to the hopper from the rear thereof by being dumped on the rear portion of the curved bottom slides down the rear portion, moves existing product forwardly, and displaces existing product being supported on the front portion causing the displaced product to move upwardly and fall on top of the fresh product moving therebeneath; and



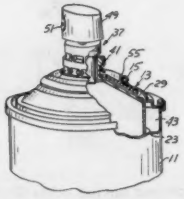
means forming a spout extending from the front of the hopper through which product is moved for removing product from the hopper.

4,211,344

SACK RETENTION AND PRESSURIZING FOR AEROSOL TYPE DISPENSERS

William R. Stoody, 5008 County Line, New Haven, Mich. 48048

Filed Jul. 26, 1978, Ser. No. 928,056
Int. Cl.[2] B67D *5/60*
U.S. Cl. 222—131 **22 Claims**



1. In an aerosol type container or dispenser having an apertured lid and a pressure chamber, a collapsible sack containing material to be dispensed nested within said chamber and having a neck projected through and suspended from said lid;

and a valve assembly nested, sealed and retained within said neck and projecting therefrom, the mounting of said neck within said lid including an annular flexible collar upon said neck spaced from said sack;

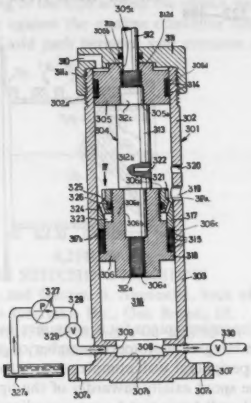
and an annular retainer projection upon said collar retainingly extending through and interlocked with an outer portion of said lid, said collar yieldably and sealingly bearing against the inside of said lid in a relationship that upon application of a pressurizing agent to said container, said collar is displaced inwardly permitting inward passage of the agent through the lid aperture and into said pressure chamber, said collar upon interruption of the application of the pressurizing agent automatically returning to sealing engagement with said lid under the action of said agent in said pressure chamber and the flexibility of the collar preventing outward passage of the pressurizing agent.

4,211,345

APPARATUS FOR THE FEEDING (METERING) OF LIQUID SYNTHETIC-RESIN COMPONENTS

Peter Taubenmann, Munich, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 782,962, Mar. 30, 1977, Pat. No. 4,167,236. This application Apr. 21, 1978, Ser. No. 898,775
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736177
Int. Cl.[2] B67D *5/46*
U.S. Cl. 222—134 7 Claims



1. In a device for metering a quantity of a flowable material, especially an abrasive-filled synthetic resin, the improvement which comprises in combination:

a cylinder;

a pair of pistons coupled together through a piston rod within said cylinder, one of said pistons constituting a drive piston and defining a pressurizable compartment in said cylinder, the other of said pistons defining a metering compartment in said cylinder;

means for feeding flowable material to said metering compartment, said other piston having a seal cooperating with a wall of said cylinder to seal said metering compartment; and

means on said other piston operable from the exterior of said cylinder for compensating for wear of said seal, said means for compensating for wear of said seal including a sleeve threaded onto said other piston and defining an outwardly open space therewith receiving said seal, said sleeve being formed along an outer peripheral portion thereof with an array of axially projecting teeth, said wall of said cylinder being formed with an opening for admitting a tool into engagement with said teeth whereby said sleeve can be rotated relative to said other piston, and a window in addition to said opening to admit a tool into engagement with said piston rod to retain said other piston against rotation while said sleeve is rotated.

4,211,346

VARIABLE VOLUME DISPENSING BOTTLE WITH PUSH-PULL CLOSURE

Ravinder C. Mehra, and James T. Hepinstall, Jr., both of Fairport, N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,896
Int. Cl.[2] B67D *5/06*; B65D *37/00*
U.S. Cl. 222—205 5 Claims

5. A variable volume dispenser bottle and integral closure comprising in combination:

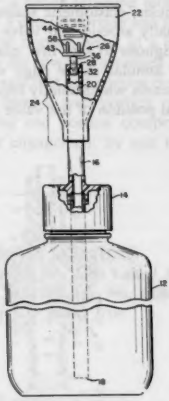
(a) a hand deformable bottle which is compressed to express a liquid from the bottle;

(b) a dispenser tube having an inlet end disposed adjacent the bottom of said bottle and an outlet end extending outside of said bottle;

(c) a measuring chamber carried by and upstanding from said dispenser tube adjacent said outlet end, said dispenser tube providing the sole communication between the interior of said bottle and said measuring chamber wherein squeezing said deformable bottle forces liquid from said bottle through said dispenser tube and into said measuring chamber;

(d) closure means for said outlet end including a first portion within said dispenser tube, a second portion outside of said dispenser tube and a stem connecting said portions, said closure means being axially movable with respect to said dispenser tube between an open and a closed position;

(e) said first and second portions cooperating with said outlet end to maintain said closure means captured to said dispenser tube as said means is moved axially between said open and closed positions;



(f) said stem being in sliding, fluid tight engagement with said outlet end and having an axial bore therein, said bore communicating at one end with the interior of said discharge tube and at its other end with a port which opens outwardly through said stem to said measuring chamber, said port being positioned on said stem so as to locate said port within said dispenser tube when said closure means is at said closed position and to locate said port outside of said dispenser tube when said closure means is at said open position;

(g) said second portion having a thin profile so it may be conveniently gripped between the thumb and index finger for moving said closure means between said open and closed position; and

(h) a horizontal flange between said stem and said second portion and ribs upstanding from said flange and extending outward from said second portion, said ribs extending generally up to about the middle of said second portion to prevent gripping said second portion adjacent said flange.

4,211,347

VALVE

William D. Mildern, 1121 W. McNab Rd., Pompano Beach, Fla. 33060

Filed Dec. 22, 1978, Ser. No. 972,260
Int. Cl.[3] B65D *83/14*
U.S. Cl. 222—402.18 22 Claims

1. In a valve for use with a pressurized aerosol dispensing

container having a mouth and containing pressurized product, said valve having:

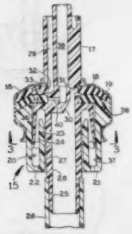
hollow annular mounting means for sealed attachment to the mouth of the container and having an annular inside surface;

a tubular valve body extending down through said mounting means and axially displaceable therein between a normal upper position and a downwardly displaced lower position, said valve body having an internal transverse wall intermediate its length and a longitudinal eduction passageway below said wall and a longitudinal product discharge passageway above said wall, said valve body having a transverse orifice opening directly into the upper end of said eduction passageway below said wall and a transverse orifice opening directly into the lower end of said product discharge passageway above said wall;

and a first annular, elastomeric sealing gasket extending circumferentially around said valve body transverse to the latter, said gasket having an annular inside edge which defines a central opening therein which snugly receives said valve body and closes said orifices in said normal position of the valve body;

the improvement which comprises:

a second annular, elastomeric sealing gasket extending circumferentially around said valve body transverse to the latter contiguous to said first gasket, said second gasket having an annular inside edge which defines a central opening therein which snugly receives said valve body in said normal position of the valve body;



means on the valve body for flexing the lower of said gaskets downward adjacent its central opening, when the valve body is displaced downward from said normal position, to provide a first connecting passageway between the two gaskets adjacent their respective central openings;

a transverse, annular, outwardly extending, upwardly-facing shoulder on the valve body extending below said lower gasket, said shoulder moving down away from said lower gasket to form between them a second connecting passageway adjacent the central opening in the lower gasket when the valve body is displaced downward to flex said lower gasket;

said valve body, when displaced downward from its normal position, positioning said orifices in registration with one of said connecting passageways to connect the upper end of said eduction passageway to the lower end of said product discharge passageway in the valve body;

means providing one or more restricted passageways extending from outside said mounting means in the container into the other of said connecting passageways for passing gaseous propellant into the latter when the valve body is displaced downward;

means defining a propellant discharge passageway extending up from said internal transverse wall separate from said product discharge passageway;

and means defining a lateral passage at the lower end of said propellant discharge passageway for registration with said other connecting passageway to pass propellant therefrom up into said propellant discharge passageway when the valve body is displaced downward;

said second gasket sealingly engaging said valve body in the latter's normal position to block said lateral passage from fluid communication with said one or more restricted passageways.

4,211,348

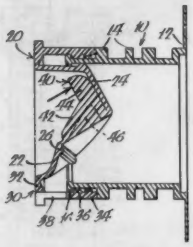
DISPENSER SPIGOT

William R. Scholle, 3000 Via Mondo, Compton, Calif. 90224

Filed Jan. 30, 1978, Ser. No. 873,366

Int. Cl.[2] B65D *47/20*

U.S. Cl. 222—498 **7 Claims**



1. A dispensing spigot for a container having a spout comprising an integral elastomeric member of generally cup shape having a peripheral wall complementary to and adapted to fit within the spout axially inwardly of the lip of the spout, said peripheral wall having at least one sealing bead on the outer surface thereof for sealing engagement with the inner surface of the spout axially inwardly from the lip thereof, a transverse wall at the inner end of said peripheral wall for closing the spigot and the spout, and manipulatable means extending from said transverse wall for flexing said transverse wall and a portion of said peripheral wall and sealing bead in a toggle effect to move said portion of said peripheral wall and sealing bead radially inwardly away from the spout to permit the dispensing of the contents of the container while other portions of said seal remain against said spout.

4,211,349

METHOD AND A DEVICE FOR APPLYING AN ENLACING TAPE AROUND AN OBJECT

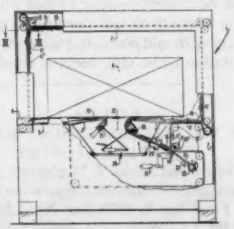
Auke van der Wal, Oss, Netherlands, assignor to Vereenigde Metaalverpakking en Hecktdraad Industrie B.V. MVM-ENDRA

Filed Dec. 8, 1978, Ser. No. 967,638

Claims priority, application Netherlands, Dec. 8, 1977, 7713625

Int. Cl.[2] B65H *17/18*

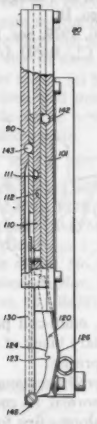
U.S. Cl. 226—171 **21 Claims**



1. A device for applying an enlacing tape around an object comprising means for supporting an object adapted to be en-

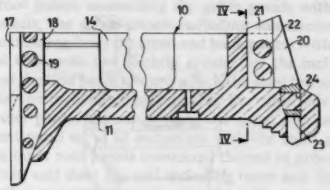
laced by a tape, endless conveyor belt means generally surrounding said supporting means for moving the tape along a path around the object from an entrance end toward an exit end of said path, means for continuously moving said endless conveyor belt means during the introduction of an end of the tape at the entrance end of said path until the departure of said tape end at said exit end, means for continuously driving the tape at the speed of movement of said endless conveyor belt means during the movement of the tape between said entrance and exit ends whereby the continuous driving movement of said continuous driving means and the continuous movement of said endless conveyor belt means at commensurate speeds results in the enlacing of the tape around the object, and means for urging the tape against the endless conveyor belt means along the length of said path between said entrance and exit ends.

4,211,350
WIRE STITCHING MACHINE
Bernard P. Kunka, and George B. Simonelic, both of Racine, Wis., assignors to Interlake, Inc., Oak Brook, Ill.
Filed Nov. 8, 1978, Ser. No. 958,715
Int. Cl.[2] B27F 7/12, 7/24
U.S. Cl. 227—8 **31 Claims**



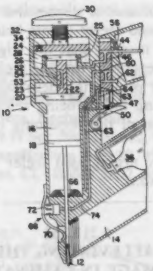
1. In a wire stitching machine including a head frame and staple-forming and driving mechanism and operating means therefor, the combination comprising a support adapted for movement with respect to the head frame, an anvil member coupled to said support for movement therewith and adapted for holding an associated length of wire, and coupling means coupling the operating means to the staple-forming and driving mechanism and to said support for effecting movement thereof, said coupling means being responsive to an initial movement of the operating means for effecting simultaneous movement of the staple-forming and driving mechanism and said support, said coupling means being responsive to further movement of the operating means for arresting movement of said support with respect to the head frame while permitting continued movement of the staple-forming and driving mechanism with respect to said support and the head frame.

4,211,351
MAGAZINE MEMBER FOR HOLDING FASTENING STAPLES AND THE LIKE
Umberto Monacelli, Via Parini 6, Monza (Milan), Italy
Filed Dec. 5, 1978, Ser. No. 967,257
Claims priority, application Italy, Dec. 13, 1977, 23010/77[U]
Int. Cl.[2] B25C 5/16
U.S. Cl. 227—120 **4 Claims**



1. A pistol-grip driving tool employing a bench for guiding an array of fasteners to be driven, such as metal staples; including: an ejection runway; a bench-retaining means; said bench being further defined by a central portion and first and second end portions, said central portion being of a plastic material and forming a guideway for row-like arranged fasteners being acted upon by a pusher; said first end portion comprising a first metal inset adapted to form a wall portion of said ejection runway, and said second end portion comprising a second metal inset, adapted for engagement by said bench-retaining means.

4,211,352
NAILING MACHINE
Thomas J. Zilka, 15 Escalon Dr., Mill Valley, Calif. 94941
Filed Feb. 26, 1979, Ser. No. 14,843
Int. Cl.[2] B25C 1/04
U.S. Cl. 227—130 **9 Claims**

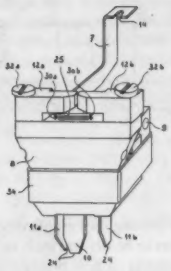


1. A pneumatic linear thrust hand tool comprising:
a main cylinder;
a ram reciprocable in said main cylinder;
a firing chamber above said main cylinder;
a large main valve operable when opened to bring said main cylinder and said firing chamber into communication;
a charging chamber;
supply valve means for bringing said charging and firing chambers into communication when said main valve is closed;
control valve means operative in one position to connect said charging chamber to a source of pressurized gas; and,
a main valve actuator operative in response to flow of gas into said charging chamber to open said main valve.

4,211,353
SAFETY DEVICE FOR FASTENER DRIVING APPARATUS

Jean-Marie Aunis, Bourg-Achard, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Mar. 15, 1979, Ser. No. 20,736
Claims priority, application France, Mar. 20, 1978, 78 07936
Int. Cl.[3] B25C 7/00
U.S. Cl. 227—156 6 Claims



1. A safety device for use with an apparatus for driving fasteners, such as pneumatic nailing hammers and stapling guns, the apparatus including an ejection passage for ejecting fasteners, and control means including a trigger for controlling ejection of fasteners, said device comprising:

a body connectable to said apparatus, said body including an opening alignable with the ejection passage of the apparatus; and

feeler means operatively associated with said body and substantially circumscribing the ejection passage for preventing actuation of the apparatus by the control means, said feeler means being connected to the control means of the apparatus so that the trigger is released only when said feeler means engages with pressure a surface receiving a fastener, said feeler means including:

a plurality of independent feeler points interconnected in such manner that actuation of the apparatus can occur only upon simultaneous depression of all of said feeler points, one of said feeler points being connected to the trigger in such manner that the trigger can be actuated only upon depression of the one feeler point;

locking means for preventing depression of the one feeler point, the locking means being releasable upon simultaneous depression of the remaining of said feeler points; and

resilient means for urging said feeler points to outermost projecting positions.

4,211,354
METHOD FOR ALLEVIATING THERMAL STRESS DAMAGE IN LAMINATES

Charles A. Hoffman; John W. Weeton, both of Rocky River, and Norman W. Orth, Cleveland, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 6, 1978, Ser. No. 893,857
Int. Cl.[2] B23K 1/20
U.S. Cl. 228—118 9 Claims

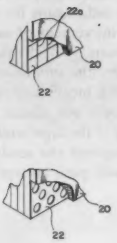
1. A method for making metallic composites comprising at least two alternating layers of metals and metal alloys having different coefficients of thermal expansion and defining an interface therebetween, said method comprising

providing a plurality of tungsten reinforcement layers,

providing a plurality of a nickel-chromium alloy matrix layers,

positively introducing discontinuities into the alloy matrix layers at said interface in said composite so as to reduce thermal stress produced by the unequal thermal expansion of said alternating layers,

assembling said tungsten reinforcement layers and said metal alloy matrix layers into alternating layers,



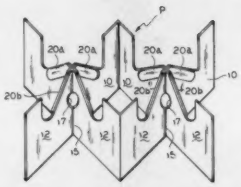
hot pressing said assembled reinforcement and matrix layers at about 1800° F. for about four hours to form said composite, and

cooling said composites to ambient temperature.

4,211,355
PARTITION

Boyd T. Skaggs, Louisville, Ky., assignor to Container Corporation of America, Chicago, Ill.

Filed Jul. 30, 1979, Ser. No. 61,697
Int. Cl.[2] B65D 5/48
U.S. Cl. 229—15 2 Claims



1. A readily erectable, multi-cell partition formed from a generally rectangular unitary blank of foldable sheet material, such as paperboard, comprising:

(a) a first pair of generally rectangular walls disposed in intersecting planes normal to each other and foldably joined to each other along a first fold line disposed normal to a side edge of said blank;

(b) a second pair of generally rectangular walls disposed in intersecting planes normal to each other and aligned with said first mentioned planes and foldably joined to each other along a second fold line disposed parallel to and adjacent said first fold line;

(c) first and second gusset means foldably joining a first wall of said first pair to an adjacent first wall of said second pair and a second wall of said first pair to an adjacent second wall of said second pair;

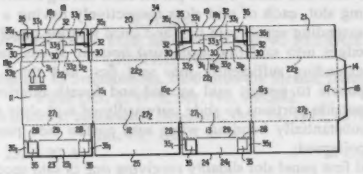
(d) each of said gusset means including a pair of gusset elements foldably joined to each other along another fold line disposed parallel to and adjacent said first and second fold lines and being foldably joined to respective adjacent walls of said pairs along fold lines which converge inwardly toward the intersection of planes of said walls.

4,211,356

BUFFERED PACKAGE

Yoichiro Tsuchiya, and Kazuhiro Kyoya, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1978, Ser. No. 952,207
Claims priority, application Japan, Oct. 20, 1977, 52-141078
Int. Cl.² B65D *5/00*
U.S. Cl. 229—16 R **18 Claims**



1. In combination

a generally rectangular blank of stiff, foldable material having

top and bottom edges and two side edges,

three fold lines generally extending between the top and bottom edges so that said blank can be folded along the three fold lines and said two side edges placed adjacent one another to thereby form an open, four-sided article,

two fold lines in the top and bottom portions of each of the first and third of said four sides which respectively define upper and lower inner flaps in said first and third sides; and

fold lines in each of said lower inner flaps which define a fore-end in each said lower inner flap, each said fore-end being adjacent said bottom edge of the blank; and

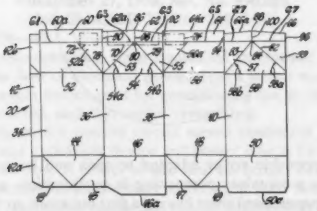
at least one buffer means so attached to a predetermined side of each of said fore-ends that said open, four-sided article can be collapsed flat to form a flat article suitable for storage, said buffer means (a) being on the outside of the flat article to facilitate said storage and (b) being adapted to protect an article placed within a package formed from said open, four-sided article.

4,211,357

CONTAINER AND BLANK FOR CONSTRUCTING SAME

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 755,404, Dec. 29, 1976, abandoned. This application Nov. 3, 1978, Ser. No. 957,393
Int. Cl.² B65D *5/72*
U.S. Cl. 229—17 G **26 Claims**



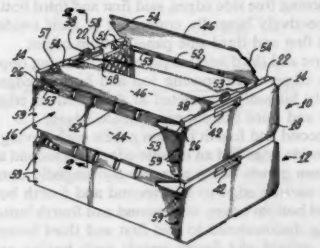
1. In a coated paperboard container including a body portion having top and bottom ends and constructed from a pair of side panels and a front panel connecting the side panels as well as a back panel connected to one of the side panels, and a bottom end closure including folded panels connected to the panels of the body portion at the bottom end thereof, a slant top end closure comprising the combination of: a folded gable roof connected to the panels of the body portion at the top end thereof; a slant top seal for sealing the roof while projecting upwardly and laterally therefrom at an inclined angle so as to be deflectable to permit stacking thereof in a manner that lessens the required storage space; said roof including outer roof panels connected to the side panels extending at inclined orientations therefrom to cooperatively define an upper ridge from which the slant top seal projects; the roof also including front and back triangular gable panels connected to the front and back panels of the body portion and having triangular inner roof panels connecting the gable panels with the outer roof panels; the gable panels including intersecting inclined edges extending from the front and back panels with the angles defined therewith just slightly greater for the inclined edges adjacent the side panel toward which the slant top seal projects than for the inclined edges adjacent the other side panel; the roof outer panels including triangular spout portions adjacent the front panel so as to cooperate with the front gable panel and the inner roof panels connected thereto to provide a pouring spout; said slant top seal including outer seal lips sealed to each other respectively projecting from the outer roof panels and also including folded front and back inner seal lips projecting from the inner roof panels between the outer seal lips respectively above the front and back gable panels; said outer seal lips including straight terminal edges spaced from their associated outer roof panels; one outer seal lip and the outer roof panel connected thereto on the side of the roof ridge toward which the slant top seal projects having a combined height that projects from the associated body portion side panel a shorter distance than the other outer seal lip and outer roof panel on the opposite side of the roof ridge so that said one outer seal lip does not project beyond the straight terminal edge of the other outer seal lip; said inner seal lips including unsymmetrical V-shaped terminal edges having respective vertices and terminating short of the straight terminal edges on the outer seal lips extending generally parallel therewith; the inner seal lips also including opposite ends connected to the outer seal lips; and each inner seal lip having the end thereof connected to said one outer seal lip projecting from the associated inner roof panel a shorter distance than the other end thereof connected to the other outer seal lip so that the slant top seal has a cross section along the roof ridge including folded inner seal lip edge portions that terminate adjacent each other in the inclined orientation thereof to lessen the likelihood of leakage occurring along the seal.

4,211,358

LUG BOX HAVING CORED-OUT PLASTIC END WALLS

Walton B. Crane, Sherman Oaks, Calif., assignor to Industrial Designs and Services, Encino, Calif.

Continuation-in-part of Ser. No. 836,612, Sep. 26, 1977, Pat. No. 4,147,289. This application Jan. 10, 1979, Ser. No. 2,295
Int. Cl.² B65D *5/02, 85/34*
U.S. Cl. 229—23 C **19 Claims**



1. A lug box for holding produce and the like comprising:

a pair of parallel end walls defining opposite ends of said box, each of said end walls being generally rectangular and cored-out, having top, bottom and side edges, at least one horizontal nailing rib adjacent said bottom edge and at

least one vertical nailing rib adjacent each of said side edges;

a wrapper having a bottom panel extending between and overlappng said bottom edges, a pair of side panels extending between and overlapping said side edges, and at least one lid flap extending between said top edges; and

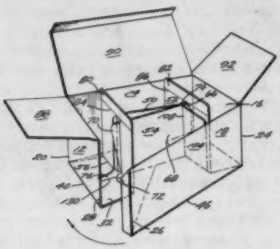
a plurality of nails driven through said wrapper into said ribs to secure said wrapper to said end walls, said nails being substantially perpendicular to at least some of said nailing ribs.

4,211,359

AUTOMATIC MULTICELL CARTON

Richard Chaffin, Port Clinton, Ohio, assignor to Clevepak Corporation, White Plains, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,243
Int. Cl.[2] B65D 5/48
U.S. Cl. 229—28 R **19 Claims**



1. A collapsible multicell rectangular carton having a collapsed state and an assembled state and being slidably transformable being said states, and formed from an integral blank, said carton comprising:

four side panels including first, second, third and fourth rectangular side panels each having opposing top and bottom edges and two opposing end edges consecutively hingedly connected together in linear end-to-end relation; the distance between the side edges of said first and third side panels and being substantially equal and the distance between the side edges of said second and fourth side panels being substantially equal;

means for hingedly securing together the free ends of said first and fourth side panels;

first, second, third and fourth bottom panels are first, second, third and fourth interior panels respectively corresponding to said first, second, third and fourth side panels to form a rectangular enclosure when said carton is in its assembled state.

said first and third bottom panels each having an outside face, and having opposing inside and outside edges and opposing free side edges, said first and third bottom panels respectively hingedly connected at their inside edges to said first and third side panel bottom edges;

said first and third interior panels each having opposing free side edges and opposing top and bottom edges, respectively hingedly connected at their bottom edges to said first and third bottom panel inside edges;

said second and fourth bottom panels each having opposing an inside edge and an outside edge, said second and fourth bottom panels being respectively hingedly connected at said outside edge to said second and fourth bottom side panel bottom edges, said second and fourth bottom panels being disconnected to said first and third bottom panels, said second and fourth panels each having angled side edge means for pressing different ones of said first and third inside panel outside faces upward when said carton is being collapsed;

said second and fourth interior panels each having an inside and an outside portion, each said inside portion having an inside edge, each said outside portion having a free outside edge, each said portion having a lower edge and a free upper edge, said outside portion lower edge comprising a free edge, said second and said fourth interior panels being respectively hingedly connected at their inside portion lower edges to said second and fourth bottom panel inside edges;

each of said hinged interior panel inside edges being longitudinally aligned when said carton is in its unfolded blank state;

said first and third interior panels each having a corresponding slot, each of said slots respectively having a portion extending across said first and third interior panel bottom edges into said first and third bottom panels, said slots extending sufficiently into said first and third bottom panels to permit said second and fourth interior panel outside portions to slide outwardly of said slots without substantially bending when said carton side panels are collapsed;

said first panel slot slidably receiving one of said second and fourth interior panel outside portions, and said third panel slot slidably receiving the other of said second and fourth interior panel outside portions, when said rectangular side panels are hingedly folded in generally vertical rectangular relation to form the sides of said carton, each of said bottom panels are hingedly folded inwardly, perpendicular to its corresponding side panel and each of said interior panels are hingedly folded into confronting parallel relation to its corresponding side panel;

means for hingedly fixing said second interior panel at its inner portion inside edge to that one said first and third interior panels having the slot means for slidably receiving said fourth interior panel outside portion;

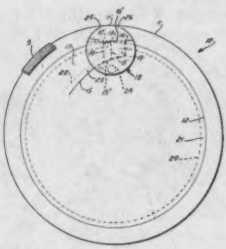
and means for hingedly fixing said fourth interior panel at its inner portion inside edge to that one said first and third interior panels having the slot means for slidably receiving said second interior panel outside portion.

4,211,360

OPENABLE CONTAINER COVER (III)

Raymond G. Scott, Oak Brook, and Lawrence S. Wysocki, Chicago, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,510
Int. Cl.[2] B65D 5/64, 47/04
U.S. Cl. 229—43 **3 Claims**



1. An openable cover adapted to span and be marginally secured to a container comprising in combination: a substantially flat paperboard sheet having a first cut score on the upper surface thereof, a second cut score on the lower surface thereof, said cut scores extending therearound and being substantially uniformly spaced from each other and from the edge of the sheet, a third cut score spaced inwardly from the first cut score on the upper surface of the sheet, a fourth cut score spaced inwardly from the second cut score on the lower surface of the sheet, said first and third cut scores defining a pull tongue therebetween, the combined depth of the said first and second cut scores and respectively of said third and fourth cut

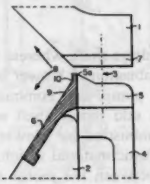
scores being approximately the thickness of the sheet, a cutout area provided between said first and second cut scores to define a free end edge of the pull tongue, a fifth cut score spaced apart from and extending substantially parallel to said free end edge of said pull tongue, two short cuts provided between said end edge and said fifth cut score to define an easy lift tab, and a protective flat piece at least partially glued to a surface portion of the sheet and covering said cutout area and said easy lift tab.

4,211,361

ANNULAR SEAL FOR SELF-CLEANING SLUDGE CENTRIFUGES

Martin Baram, 13 Svanholmvej, 2660 Brondby Strand, Denmark

Filed Oct. 2, 1978, Ser. No. 948,032
Claims priority, application Denmark, Oct. 14, 1977, 4570/77
Int. Cl.[2] B04B *1/14*
U.S. Cl. 233—20 A **20 Claims**



1. A displaceable annular seal for a self-cleaning sludge fluid centrifuge where the sludge fluid contents are ejected through a peripheral slit which is defined upwardly by an upper bowl part and downwardly by the lower bowl part and by the annular seal, said annular seal being mounted on a ring piston and comprising a relatively soft and elastic sealing part and a relatively stiff and hard reinforcement part, said soft sealing part being fixedly fastened to said reinforcement part at the surface which faces the inner space of said centrifuge with said hard reinforcement part having an upper edge which directly touches said upper bowl part, said soft sealing part and said hard reinforcement part forming a substantially inseparable unit with said soft sealing part facing said fluid in said centrifuge and being deformable upwardly against said upper bowl part by the fluid pressure in said centrifuge, whereby the sealing of said centrifuge is dependent on the flow of said soft sealing part under the fluid pressure in said centrifuge.

4,211,362

SMOKE DETECTING TIMER CONTROLLED THERMOSTAT

Lonnie G. Johnson, 2923 N. Casitas Ave., Altadena, Calif. 91001

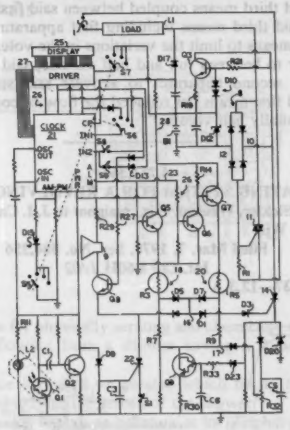
Filed Mar. 27, 1978, Ser. No. 890,825
Int. Cl.[2] G05D *23/00*; F24F *7/00*
U.S. Cl. 236—47 **6 Claims**

1. A smoke-detecting, timer-controlled thermostat for controlling the flow of electrical power from a power source to a heat exchanger device used for conditioning the air in an area to be controlled, said thermostat comprising:

a. a temperature control circuit means connected between said heat exchanger device and power source for controlling the flow of power to said heat exchanger device, said temperature control circuit including at least two temperature responsive means that can be alternatively actuated to selectively control the temperature at which said temperature control circuit means will allow full power to flow to said heat exchanger device and a duty cycle control means for determining the temperature change at which said temperature control means will discontinue the flow of full power to said heat exchanger device and for determining the rate at which on-off cycles of said heat exchanger device occur,

b. an adjustable timing circuit means connected to said temperature control circuit means actuating during predetermined time periods a selected one of said temperature responsive means employed in said temperature control circuit means, whereby at predetermined times a selected temperature will automatically be maintained in the controlled area and at least two different temperatures can be selected for alternate times,

c. a smoke detector means connected to said temperature control circuit means for sounding an alarm in response to the presence of smoke and inhibiting the flow of power to said heat exchanger device by disabling said temperature control circuit means,



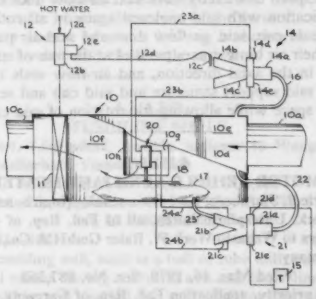
d. said timing circuit means further including an output means for supplying a pulsating voltage at an audiable frequency to said smoke detector means, said smoke detector means using said pulsating voltage to produce an alarming sound when smoke is detected.

4,211,363

FLUIDICALLY-CONTROLLED AIR-CONDITIONING SYSTEM

Gene W. Osheroff, Las Vegas, Nev., assignor to McQuay-Perfiex, Inc., Minneapolis, Minn.

Filed Feb. 11, 1976, Ser. No. 657,200
Int. Cl.[2] F24F *3/06*
U.S. Cl. 236—49 **9 Claims**



1. An air-conditioning system mounted between input and output ducts, the conditioned air entering the system via the input duct and exiting the system for the room or zone to be conditioned via the output duct, said system having hot-water

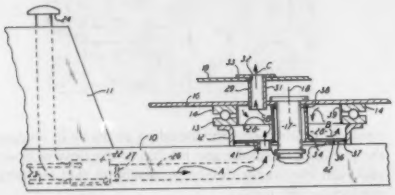
coils mounted therein and a valve for regulating the flow of hot water thereto, said system comprising: first pure fluid amplifier means for varying the volume of the conditioned air exiting the system according to the air-conditioning requirements of the room or zone, the greater the requirement the greater the volume and vice versa; second pure fluid amplifier means operable to variably open the close the valve according to the air-conditioning requirements of the room or zone, the greater the requirement the less the valve opening and vice versa; and third means coupled between said first and second means, said third means including first apparatus coupled to said first means to limit the variations in the volume of conditioned air to between full and half volume, said third means including second apparatus to activate said second means when said first means has reduced the flow of conditioned air to substantially half volume.

4,211,364

HEATING SYSTEM FOR A REVOLVING CAB

Emory J. Sickler, Wausau, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Mar. 7, 1978, Ser. No. 884,256
Int. Cl.[3] B60H *1/02*
U.S. Cl. 237—12.3 A **2 Claims**



1. A heating system for a revolving cab, comprising a support structure, a heat source on said support structure, a cab rotatably supported on said support structure, a rotation bearing interposed between said support structure and said cab for rotatably supporting said cab and being annular in shape and defining an air-tight enclosed space, said enclosed space extending around the axis of rotation of said cab and being in air-flow communication with said heat source and with said enclosed spaced being further defined by said support structure and said cab and located therebetween, a blower in flow-communication with an air passageway for blowing heated air from said heat source and into said enclosed space, an air-flow duct extending between said cab and said enclosed space for conducting heated air into said cab, said air-flow duct being offset from the axis of rotation of said cab and extending into said enclosed space to thereby have said air-flow duct in air-flow communication with said enclosed space in all rotated positions of said cab, said air-flow duct and said air passageway having their air blower axes parallel to the axis of rotation for air flow in the axial direction, and air-flow seals interposed between said support structure and said cab and sealing said enclosed space while allowing for rotation of said cab.

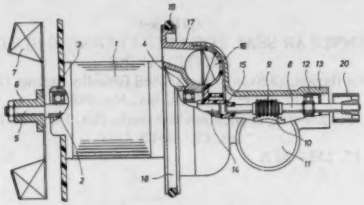
4,211,365

MOTOR VEHICLE AUXILIARY HEATER

Reiner Friedl, Starnberg; Karl Dworschak, Munich, and Werner Hornfeck, Unterpfaffenhofen, all of Fed. Rep. of Germany, assignors to Webasto Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,368
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 7708511[U]
Int. Cl.[2] B60H *1/22*
U.S. Cl. 237—12.3 C **8 Claims**

5. In an auxiliary heater for motor vehicles with a burner assembly for liquid fuels of the type which is provided with a motor having a motor shaft for driving auxiliary assemblies such as a combustion air blower, a fuel pump, rotational atomizer or the like, the improvement comprising a drive shaft having a distal end with respect to said motor mounted in a radial bearing which is supported in a housing of said burner assembly and which has its proximal end with respect to the motor connected to the motor shaft by way of a flexible elastic coupling, such that auxiliary assemblies may be driven by said



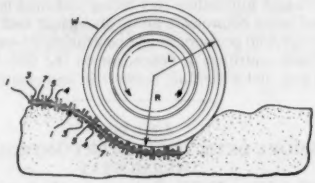
motor by way of said drive shaft, wherein the burner assembly is provided with a combustion air blower fan disposed between the motor and a fuel pump, said combustion air blower fan being mounted upon said motor shaft so as to be rotated thereby, and said combustion air blower fan having a hub formed of a flexible elastic material which serves as said flexible elastic coupling between the motor shaft and the drive shaft.

4,211,366

VEHICLE TIRE TRACTION STRIP

John J. Czarnota, 1614 Scoville Ave., Berwyn, Ill. 60402

Filed Aug. 21, 1978, Ser. No. 935,364
Int. Cl.[2] E01B *23/00*
U.S. Cl. 238—14 **7 Claims**



1. A traction strip for driving wheels of motor vehicles comprising

an integrally formed flat and flexible sheet having predetermined size and shape,

a plurality of metal channels contiguously spaced and mounted on each side of said sheet, said channels being equal in size and having side walls substantially perpendicular to their base, and

means for mounting said channels on said sheet,

said channels being secured to said sheet in a back to back position such that the side walls of upper channels register with respective side walls of lower channels, the upwardly directed channels engaging a driving wheel and the downwardly directed channels gripping the road surface, and

the predetermined values of the spacing between adjacent channels and the height of each channel being related to each other such as to exert a limiting effect on the maximum bending of the traction strip in response to the load.

4,211,367

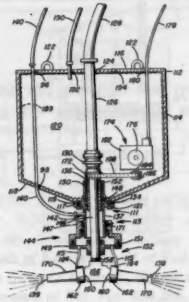
GUNNING APPARATUS FOR IN SITU SPRAYING OF REFRACTORY MATERIAL

Ralph E. Allison, Wheelersburg, Ohio, assignor to BMI, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 780,268, Mar. 23, 1977, abandoned. This application Aug. 16, 1978, Ser. No. 934,327

Int. Cl.[2] B05B *3/02*

U.S. Cl. 239—226 14 Claims



1. Gunning apparatus for spraying a refractory product in situ upon the interior surface of a refractory body comprising,

a housing having an interior chamber with an inlet and outlet thereto,

a feed conduit extending through said inlet for conveying a stream of dry refractory material,

a nozzle assembly rotatably supported in said housing outlet, said nozzle assembly having an inlet positioned within said housing and an outlet extending from said housing,

a supply conduit for conveying a wetting agent to said nozzle assembly for mixture with the stream of dry refractory material to form a spray of refractory product from said nozzle assembly outlet,

said nozzle assembly having a mixing chamber portion for receiving the wetting agent and air entrained dry refractory material to form the refractory product,

said mixing chamber being positioned adjacent to said nozzle assembly outlet,

swivel means for connecting said supply conduit to said nozzle assembly to permit rotation of said nozzle assembly relative to said supply conduit as the wetting agent is conveyed to said nozzle assembly,

conduit means connected at one end to said mixing chamber for conveying the wetting agent thereto,

said conduit means being rotatably connected at the opposite end to said swivel means to permit rotation of said conduit means relative to said swivel means,

said supply conduit being connected to said swivel means such that the wetting agent is conveyed to said swivel means and therethrough to said conduit means and said mixing chamber for mixture with the dry refractory material, and

drive means supported within said housing and connected to said nozzle assembly for rotating said nozzle assembly at a preselected speed in a preselected rotary direction to apply the refractory product onto a preselected area of the interior surface of the refractory body.

4,211,368

DEVICE FOR AERATING AND CHEMICALLY ACTIVATING SHOWER WATER

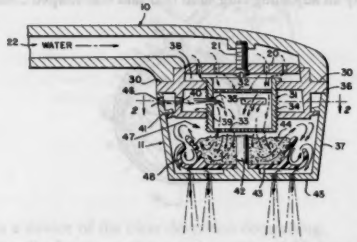
Francis R. Legros, 64, rue Compans, and Alain L. Tourman, 60, rue de Babylone, both of Paris, France

Continuation-in-part of Ser. No. 694,375, Jun. 9, 1976, abandoned. This application Apr. 19, 1978, Ser. No. 897,905

Claims priority, application France, Jun. 9, 1975, 75 17860

Int. Cl.[2] B05B *7/24*

U.S. Cl. 239—315 1 Claim



1. A device for physically aerating and chemically activating the waters flowing from a shower having a screen which comprises:

(a) a device including an aerator which fits in fluid tight relationship over the screen of the shower;

(b) said device having an aperture at its periphery to draw air into the aerator;

(c) said aerator having a cylindrical mixing cartridge axially aligned;

(d) said mixing cartridge receiving water from the shower screen at its inlet end;

(e) said mixing cartridge having circumferential apertures to introduce the air to the cartridge;

(f) said mixing cartridge having a screen over its exit end to direct a plurality of fine jets of aerated water downwardly;

(g) magazine attached to said aerator;

(h) said magazine of generally circular shape and attached to said aerator to receive the water jets leaving the screen of the aerator;

(i) said magazine having a screen below the exit screen of the aerator;

(j) said magazine screen directing the water out of the aerator and magazine;

(k) a holder for holding solid hydrofusable chemical for chemically altering the waters flowing from the aerator to the magazine; and

(l) said holder suspended below the aerator to receive the jets of water leaving the screen of the aerator,

whereby a stream of water leaving a shower is simultaneously aerated and chemically activated.

4,211,369

TUMBLING MILLS

Erich Eigner, Lödersdorf, Austria, assignor to Waagner-Biro Aktiengesellschaft, Vienna, Austria

Filed May 3, 1978, Ser. No. 904,915

Claims priority, application Austria, May 5, 1977, 3187/77

Int. Cl.[2] B02C *17/22*

U.S. Cl. 241—182 5 Claims

1. In a tumbling mill, such as a ball or tube mill, outer cylindrical shell means having a central axis and inner liner means situated within and carried by said shell means, said liner means including a series of rings distributed along and each surrounding said axis with each ring being made up of a series of plates circumferentially distributed about said axis, said liner means defining therein a hollow interior space surrounded by said liner means and having in a plane normal to said axis a

star-shaped cross-sectional configuration defined by a plurality of concavely rounded outer corners and a plurality of inner corners, said inner corners each defining a sharp point extending inwardly toward said central axis, said outer and inner corners being distributed in an alternating manner circumferentially about said axis, and wherein each ring surrounds a space having said cross-sectional configuration and is angularly offset with respect to an adjoining ring so that the angular orientation of the rounded star corners provided by one ring is different from the angular orientation of the star corners provided by an adjoining ring such that said star-shaped cross-sectional configuration is formed by a pair of squares defining said rounded corners and which are angularly offset one with respect to the other with the rounded corners of one of said squares alternating with the rounded corners of the other of said squares to provide the configuration of an eight-pointed star having said rounded outer corners and said sharply pointed inner corners, the rounded corners of one of said squares all having equal radii of curvature and the rounded corners of the other of said squares also having equal radii of curvature, with the latter radii of curvature being different from the radii of curvature of said one square.

4,211,370

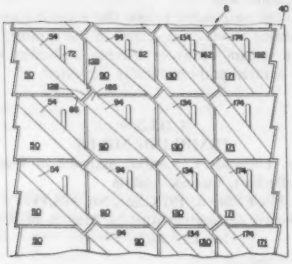
LINING FOR GRINDING MILLS

Clive J. Wilson, Scottsdale, Ariz., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 24, 1978, Ser. No. 963,379

Int. Cl.[2] B02C *17/22*

U.S. Cl. 241—183 **4 Claims**



1. A generally rectangular liner plate for grinding mills, said plate having an integral raised lifter bar extending across diagonally opposite corners, bolt receiving holes through said plate and lifter bar for receiving bolts to secure the plate within a grinding mill, and said lifter bar having at least one end extending outwardly beyond one of said diagonally opposite corners.

4,211,371

DEVICE FOR THE BALANCED FIXING AND MOUNTING OF BLADES IN MACHINES PROVIDED TO CUT, CRUSH AND HASH

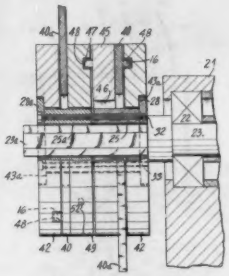
Eric P. L. Hotimsky, 24 allee des Chalets, Pavillons-sous-Bois, France

Continuation of Ser. No. 808,917, Jun. 22, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,765

Claims priority, application France, Jun. 24, 1976, 76 19231; Apr. 19, 1977, 77 11758

Int. Cl.[2] B02C *18/16*

U.S. Cl. 241—282.1 **13 Claims**



1. A structure for adjustably mounting blades on a drive shaft in industrial machines adapted to cut, crush and hash food products, said structure comprising at least two blades separated by at least one adjusting washer, at least one of said blades having an elongate opening with a median axis accepting therethrough said drive shaft for driving by said drive shaft while permitting radial displacement of said blade relative to said drive shaft, said blade comprising on one side thereof a protruding portion substantially aligned with said median axis, said adjusting washer having a substantially circular aperture accepting therethrough said drive shaft and an arcuate channel in the shape of a spiral in which penetrates the protruding portion of said blade, and means adjustably rotating said adjusting washer relative to said blade for moving the protruding portion in said arcuate channel for radially displacing said blade relative to said shaft, said blades and washers being mounted on said shaft and held thereon by means of conventional tightening means such as nuts and counternuts mounted on said shaft.

4,211,372

FORK ACCESSORY FOR WINDING SPAGHETTI

Janos Zapomel, Oetlingerstrasse 5, 4057 Basel, Switzerland

Filed Nov. 6, 1978, Ser. No. 957,697

Claims priority, application Switzerland, Nov. 15, 1977, 14026/77

Int. Cl.[2] A47J *43/28*

U.S. Cl. 242—1 **2 Claims**

1. A fork accessory for attachment to a dish for winding spaghetti on the fork comprising:

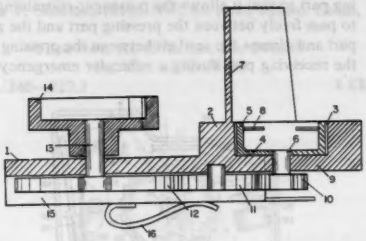
a generally rectangular base having a thickened portion at one edge and a relatively thin portion at the other edge including clamping means to detachably secure said base to a dish, said thickened portion of said base having a circular recess

a rotatable collar in said recess fitted with a plurality of pins protruding inwardly from the circumference of said collar for engaging the forks a shaft joined to the base of said collar, said shaft protruding from the bottom of said base below said recess;

a driving mechanism connected to said shaft;

a hand wheel means connected to said driving mechanism

for rotating said collar and wrapping spaghetti about the fork; and



a vertical guiding wall alongside said recess, said guiding wall projecting above said recess to guide the wrapped spaghetti about said fork.

4,211,373

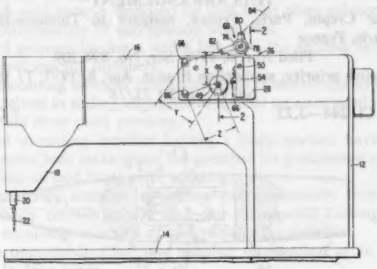
THREAD GUIDING SYSTEM FOR SEWING MACHINE BOBBIN WINDERS

Reinhold Papajewski, Stutenesee; Helmar Holl, and Ulrich Schmedtkord, both of Karlsruhe, all of Fed. Rep. of Germany, assignors to The Singer Company, Stamford, Conn.

Continuation-in-part of Ser. No. 834,206, Sep. 19, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,621

Int. Cl.³ B65H *54/18, 63/08*

U.S. Cl. 242—20 **2 Claims**



1. In a sewing machine having a drive means for driving sewing instrumentalities, a thread supply, a thread guide having a thread constraining aperture for constraining the thread from the supply, a winding mechanism including a winder shaft with a bobbin receiving spindle of a finite bobbin supporting length and means operatively and selectively connecting the winder shaft to the drive means for rotating the winder shaft and the spindle, the improvement comprising, means for mounting said thread guide relative to said winder such that said thread constraining aperture is disposed in a plane substantially normal to the axis of said spindle intermediate the length thereof, and a plurality of spaced guide members each having a low friction thread engaging surface, said surface being straight, substantially parallel to the axis of said spindle, and of a length at least equal to that of said bobbin supporting length for folding the thread path, said thread path originating at said thread constraining aperture, folding about said guide members in seriatim and terminating at said spindle, the total length of said thread path bearing a predetermined proportion or ratio to the bobbin supporting length of said bobbin receiving spindle, the distance from said thread constraining aperture to said bobbin receiving spindle being equal to or less than the distance from any said guide member to said bobbin receiving spindle.

4,211,374

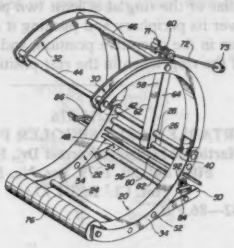
PORTABLE DEVICE FOR SUPPORTING A ROLL OF ALUMINUM SHEETING FOR DISPENSING

Lawrence P. Salvino, 285 Milton Rd., Waucanda, Ill. 60084

Filed Mar. 1, 1979, Ser. No. 16,450

Int. Cl.² B65H *75/02*

U.S. Cl. 242—55 **4 Claims**



1. In a device of the class described comprising:

(a) a pair of stationary, concaved, inverted U-shaped channels fixedly secured together in spaced relationship;

(b) a pair of elongated, convexly shaped, U-shaped channels pivotally affixed one to each of said concave channels at one end thereof and secured in spaced relationship;

(c) an upwardly extending bracket positioned medially between said channels;

(d) adjusting means cooperating with said bracket for fixedly securing said convex channels in variable position relative to said concave channels; and

(e) shiftable means on said concave channels to secure a roll of aluminum sheeting in said device to prevent lateral movement of said roll.

4,211,375

CHUCK FOR WEBS OF MATERIAL WOUND ONTO SPOOLS

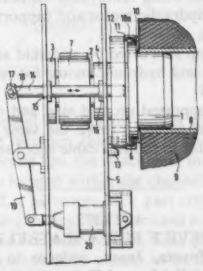
Peter Weiss, Neuss, and Karl Thievessen, Düsseldorf, both of Fed. Rep. of Germany, assignors to Jagenberg Werke Atkiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,511

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1978, 2814338

Int. Cl.² B21C *47/00;* **B65H** *17/02*

U.S. Cl. 242—81 **5 Claims**



1. In an apparatus for rotatably mounting a web on a spool including two chucks, each carried by a shaft which is rotatably mounted in a mounting frame, and each having a mandrel axially delimited by a stop flange and on which the spool is releasably clamped, the improvement comprising for each chuck: a stripping ring disposed about the mandrel between the stop flange and a spool to be received and configured to be

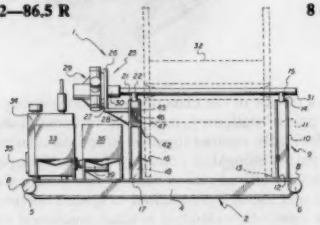
axially slidable therealong, wherein the ring comprises an axially extending collar, and actuating means mounted on the mounting frame and coactive with the stripping ring to effect the axial displacement thereof away from the stop flange so as to strip the spool from the mandrel, said actuating means comprising a pressure member mounted for movement from a rest position to an operative position and having means for grasping the collar of the ring at at least two points uniformly distributed over its periphery and pushing it away from the stop flange when in the operative position, and permitting the free rotation of the ring when in the rest position.

4,211,376

PORTABLE CABLE SPOOLER FOR WELLS

Lloyd E. Martin, 5418 Bridge Forrest Dr., Houston, Tex. 77088

Filed Jul. 20, 1979, Ser. No. 59,456
Int. Cl.[2] B65H *75/40*
U.S. Cl. 242—86.5 R **8 Claims**



1. A portable, field-powered cable spooler for oil wells comprising

a supporting skid comprising a rectangular framework constructed of structural steel members joined in rectangular form and including laterally extending support members at each end extending beyond the sides of said skid with end portions adapted to be secured by lifting apparatus for transporting the same,

a pair of vertically extending supports extending from and secured on said skid in longitudinally spaced relation thereon,

open-top trunnion bearings supported on said supports,

a support member secured on one of said supports adjacent to the trunnion bearing thereon,

a hydraulic motor supported on said support member,

an axle member adapted to support and drive a well cable spool for feeding and winding power cable,

said axle member being removably supported in and operated by said hydraulic motor and supported on said trunnion bearings,

a hydraulic pump supported on said skid and hydraulically connected to said hydraulic motor for reversibly driving the same, and

motor means supported on said skid and operatively connected to said pump to drive the same to operate said hydraulic motor to rotate a cable spool supported on said axle.

4,211,377

LOCKING DEVICE FOR A SEATBELT SYSTEM

Jun Yasumatsu, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

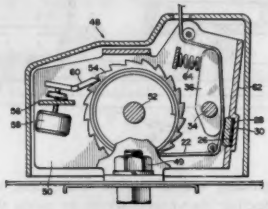
Filed Jan. 4, 1979, Ser. No. 873
Claims priority, application Japan, Mar. 24, 1978, 53-38186[U]
Int. Cl.[2] A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.2 **6 Claims**

1. A locking device for seatbelt systems for vehicle comprising:

a base;

a receiving part provided on said base;

a pressing part which is normally separated from the receiving part so that it allows the passenger-restraining seatbelt to pass freely between the pressing part and the receiving part and clamps the seatbelt between the pressing part and the receiving part during a vehicular emergency; and



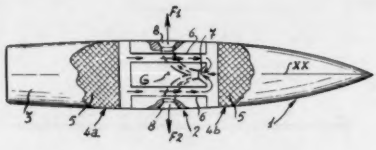
a shock-absorbing part interposed between the base and the receiving part, and which is deformed by the pressing force of the pressing part so that the receiving part is caused to face in the direction from which the pressing force is received.

4,211,378

STEERING ARRANGEMENT FOR PROJECTILES OF THE MISSILE KIND, AND PROJECTILES FITTED WITH THIS ARRANGEMENT

Roger Crepin, Paris, France, assignor to Thomson-Brandt, Paris, France

Filed Apr. 6, 1978, Ser. No. 894,209
Claims priority, application France, Apr. 8, 1977, 77 10755
Int. Cl.[2] F42B *15/18*
U.S. Cl. 244—3.22 **7 Claims**

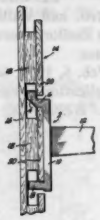


1. A piloting arrangement for a guided missile having a body comprising, in combination, two gas generators in said missile body for providing a source of gas flow, said two gas generators being coupled in parallel and disposed symmetrically at either side of the center of gravity of said missile body, a nozzle having a throat disposed between said two gas generators coaxially with the longitudinal axis of said missile, conduit means in said missile for conducting said gas flow from said gas generators to said nozzle throat, a plurality of peripheral ejection openings in said missile body localized in the vicinity of a plane perpendicular to the longitudinal axis of said missile body containing the center of gravity of said missile, a plurality of divergent conduits in said missile body for connecting said nozzle to said peripheral ejection openings, said divergent conduits having a curvature whereby the lateral force resulting from the flow of gas through said ejection openings passes effectively through the center of gravity of said missile, a pivotally mounted mounted blade having sides disposed partially in the neck of said nozzle, said blade sides forming part of the walls of said divergent conduits and means for pivoting said blade into a selected position for controlling the distribution of said gas flow through said divergent conduits and said ejection openings.

4,211,379
PANELBOARD AND MOUNTING FIXTURE COMBINATION

Myron B. Morgan, 15200 SW. 78 Ct., Miami, Fla. 33157, and Steven F. Sharloe, 18101 NW. 68 Ave., Miami Lakes, Fla. 33015

Filed Nov. 20, 1978, Ser. No. 961,881
Int. Cl.[2] A47G 29/02
U.S. Cl. 248—222.2 4 Claims



1. A panelboard structure and mounting member combination, comprising,

an upstanding back plate,

a plurality of elongated, horizontally aligned spacing members in equi-distance relationship fixedly secured to said back plate,

a front plate having a plurality of elongated, horizontally aligned grooves disposed therethrough in equidistance relationship,

said grooves thereby defining a plurality of elongate, horizontally aligned front plate portions,

each said groove disposed on said front plate substantially intermediate of said spacing members,

said grooves having a width less than the spacing between said spacing members,

a mounting member configured and dimensioned to be received in sliding engagement against an associated one of said front plate portions,

said mounting member having a body portion having an outer base rectangular flat member for positioning against one of said front plate portions,

one guide member extending perpendicularly from said body portion as one of a pair of opposed locking jaws secured to one end of said rectangular member,

an opposite locking jaw member terminating in an offset locking piece,

said locking piece extending perpendicularly from said opposite locking jaw member so that it is disposed rearwardly of said front wall portion when said mounting fixture is in position,

said outer base rectangular flat member having a breadth substantially greater than the width of said grooves so that wobble of the rectangular member against the front plate portion is made minimal,

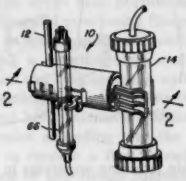
whereby positioning the mounting fixture on said panelboard provides a laterally movable, non-wobbling sliding face across said front plate portion.

4,211,380
UNIVERSAL HOSPITAL BRACKET

Thomas R. Lillegard, Crystal Lake; Richard A. Rollins, Mundelein, and Ronald C. Stauber, Hawthorn Woods, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Sep. 28, 1978, Ser. No. 946,590
Int. Cl.[2] A47B 96/06
U.S. Cl. 248—229 15 Claims

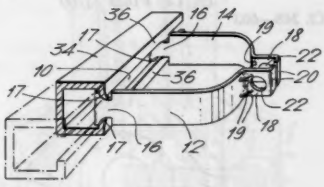
1. A universal clamp assembly for use in supporting and grasping a medical appliance which includes: an elongated unitary housing having means for securing said assembly to a pole or other support; a pair of opposed arms having outer ends extending outwardly from said housing and which define a jaw for grasping an appliance, each of said arms having pivot point means for pivotally securing said arms to said housing and said arms pivotally movable between an open position and a closed or grasping position; means cooperating with said arms for permitting said arms to be rotated about the axis of the housing; and rotatable biasing means carried in said housing and cooperating with said arms so as to resiliently bias said arms toward a closed or grasping position with a force sufficient to grasp a medical appliance placed between said arms and wherein each of said arms includes an inner portion extending inwardly into said housing and rearwardly from said pivot point means, and said biasing means including cam means for camming cooperation with the inner portion of each of said arm means, and spring means for urging said cam means against said inner portions of said arm means and causing said arm means to pivot and thereby cause said jaw to close and grasp said appliance.



4,211,381
MOUNTING DEVICE

Robert A. H. Heard, Church Farm, 63 Church La., Backwell, Bristol BS19 3JJ, England

Filed May 26, 1978, Ser. No. 909,960
Claims priority, application United Kingdom, May 31, 1977, 23038/77
Int. Cl.[2] A47B 96/06
U.S. Cl. 248—231 8 Claims

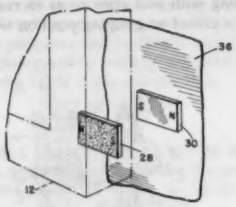


1. An attachment member for use in fixing an article to a channel-shaped member, the mouth of the channel being restricted by inturned lips, the attachment member comprising a head part to be located within the channel and be retained by the lips thereof, a narrower neck part connected to the head part for extending through the restricted mouth of the channel, and a body part connected to the neck part and attached or adapted for attachment to a strap to be fastened around said article to hold it to the channel-shaped member, the neck part of the attachment member widening in the region of the head part, but with at least the initial widening being spaced from the head part, to provide shoulders between the neck part and the head part to bear edgewise upon the inside surfaces of the channel lips when the strap is tightened around the post and locally deform the lips so as to key the attachment member against movement along the channel.

4,211,382
PICTURE FRAME RETAINER

Robert J. Bonfils, 6750 Alamo Way, La Mesa, Calif. 92041

Filed Oct. 20, 1977, Ser. No. 843,975
Int. Cl.[2] A47F 7/14; A47G 1/16
U.S. Cl. 248—467 1 Claim



1. An adjustable retaining apparatus in combination with a picture frame for adjustably securing said picture frame into vertical alignment when hanging on a wall, said combination comprising:

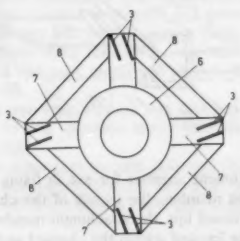
a picture frame for hanging on a wall,

at least a pair of magnetically attracting retaining members for securing the lower edge of a picture frame into preselected aligned positions on a wall and permitting infinite lateral adjustment thereof, one of said members being a first strip of generally flat rectangular magnetic tape and including mounting means defined by an adhesive backing for mounting on said frame, the other of said members being a second generally flat rectangular strip of magnetic tape and including mounting means defined by an adhesive backing for mounting said member on said wall in opposed attracting relationship and oriented to permit infinite lateral sliding movement between said pair of retaining members while maintaining said attracting relationship.

4,211,383
ARRANGEMENT FOR SUPPORTING VERTICAL-AXIS MACHINE HOUSING

Mihailo Starcevic, Mellingen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 22, 1977, Ser. No. 789,885
Int. Cl.[2] F16M 13/00
U.S. Cl. 248—603 7 Claims



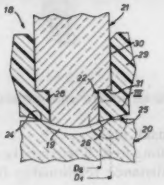
1. In a support structure for a component of a vertical-axis machine which expands under operating conditions due to generation of heat, an improved support structure for maintaining a stabilized circularity of said component during thermal expansion, said improved support structure comprising:

a plurality of plate springs arranged in substantially vertical planes, said plate springs each being individually secured between said component and a support member to support the component of the vertical axis machine, each of said plate springs being skewed relative to a radial projection both extending from the vertical axis of said machine and intersecting said plane in which each of said plate springs is arranged so that an acute angle between 0° and 90° is formed between the vertical plane in which each of the plate springs is arranged and the radial projection extending from the vertical axis of the machine.

4,211,384
MOLDING ASSEMBLY FOR CASTING SOFT CONTACT LENSES

Claude Bourset, Creteil, and William Lenne, Gagny, both of France, assignors to Essilor International (Cie Generale d'Optique), Creteil, France

Filed Feb. 6, 1979, Ser. No. 9,788
Claims priority, application France, Feb. 7, 1978, 78 03323
Int. Cl.[2] B29C 5/00; B29D 11/00
U.S. Cl. 249—160 11 Claims

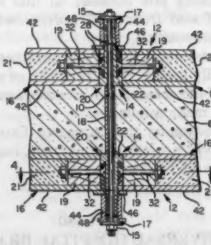


1. A molding assembly for casting soft contact lenses, comprising a concave die and a convex die disposed opposite each other and a resilient material gasket establishing a junction between the peripheries of the dies defining together a molding cavity, the outer perimeter of the molding cavity being defined by line contact between a sealing ridge and a bearing surface, the sealing ridge being part of one of the concave die and the annular gasket and the bearing surface being part of the other of the concave die and the resilient material gasket.

4,211,385
CONCRETE FORM STRUCTURE

Ronald C. Johanson, Vancouver, Wash., and Bill W. McDonald, Lake Oswego, Oreg., assignors to Foam-Ply, Inc., Portland, Oreg.

Filed Nov. 16, 1978, Ser. No. 961,122
Int. Cl.[2] E04G 11/08
U.S. Cl. 249—192 14 Claims



1. In a concrete form,

a plurality of panel members fitting together edgewise,

a plurality of arcuate segments secured to the edges of the panel members and forming a sleeve when the panel members are fitted edgewise together,

a first fastening member having a shank portion extending through the sleeve and also having an undercut head at one end thereof for overhanging one end of each of the segments,

and a second fastener member for drawing the head over the

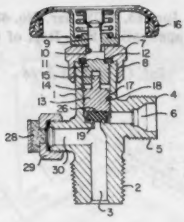
ends of the segments to hold the segments against separation.

4,211,386

SLOW OPENING CYLINDER VALVE

William C. Yocum, Mt. Lebanon Township, Allegheny County, and David E. Hughes, Whitehall Borough, both of Pa., assignors to Superior Valve Company, Washington, Pa.

Filed Mar. 28, 1979, Ser. No. 24,560
Int. Cl.[2] F16K *1/52*
U.S. Cl. 251—122 8 Claims



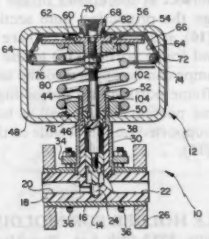
1. A cylinder valve comprising a valve body having a projecting raised annular valve seat surrounding a gas passage, a stem in threaded relation to the valve body whereby rotation of the valve stem in the valve body moves the valve stem toward and away from the valve seat, a circumferential shroud extending from the end of the valve stem and surrounding the valve seat when the valve is closed and partially open, a resilient seal member positioned within the recess on the end of the valve stem formed by the shroud, said resilient seal member having a tapered projection which extends into the gas inlet passage when the valve is in closed position and provides a gas tight seal between the valve stem and the valve seat.

4,211,387

VALVE CONSTRUCTION

Williams G. Getchell, and Norman A. Lambert, both of Warren, R.I., assignors to G. W. Dahl Company, Inc., Bristol, R.I.

Filed Mar. 13, 1978, Ser. No. 886,625
Int. Cl.[2] F16K *41/10, 31/365*
U.S. Cl. 251—335 B 9 Claims



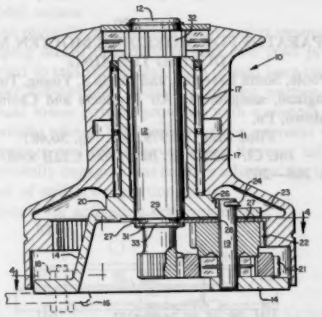
1. A valve and valve actuation assembly for controlling the flow of fluids therethrough, said valve assembly comprising a housing including a bonnet and a valve chamber, a longitudinal bore within said bonnet and communicating with said valve chamber, a longitudinally extendable hollow bellows assembly positioned in said bore, means at a first upper end of said bellows for simultaneously positioning the upper end of said bellows in fixed relationship to said bonnet and for sealing said bore, a plug positioned at the opposite end of said bellows and forming an end closure therefor whereby the outer surface of said bellows is substantially fluid impervious, said plug adapted for movement within said chamber between open and closed positions thereof, said actuator assembly including a frame in turn having an actuator rod extending through a fframe opening into the hollow interior of said bellows through an opening positioned above said sealing means in said first end thereof, said rod alternatively extends or contracts said bellows within said bore and moves said plug between said open and closed positions of said valve whereby fluid within said chamber and said bore is prevented from contacting said actuator rod, said bellows assembly comprising a member including a lower plug portion, an intermediate bellows portion having a plurality of accordion pleats and an upper head portion including an outwardly extending sealing and positioning flange, said actuation assembly connected to said bonnet and including actuation drive means including a return motion coil spring housed therein for moving said rod longitudinally with respect to said bore, said bore terminating in an upper inwardly directed seat, an internally threaded bore extension positioned above said seat, said bore extension extending into the interior of said spring and adapted to receive a first threaded nut therein, lower surface portions of said flange adapted to engage said seat and said first nut adapted to engage upper surface portions of said flange whereby said bellows member head is sealingly and fixedly retained within said bore, and said bore extension also having an outer threaded surface portion extending into said actuator assembly frame through said frame opening for receipt of a second nut, said second nut also positioned within the hollow interior of said coil spring and adapted for contact therewith so as to simultaneously position said spring and attach said actuation assembly to said bonnet.

4,211,388

REMOVABLE MAIN SHAFT RETAINER FOR DECK WINCH

Jesus Guangorena, Atherton, Calif., assignor to Barient Company, Menlo Park, Calif.

Filed Sep. 1, 1978, Ser. No. 938,808
Int. Cl.[2] B66D *1/30*
U.S. Cl. 254—344 12 Claims



1. In a deck winch having a base, a main shaft disposed centrally within the base, a pinion assembly including a pinion shaft mounted in the base and a plurality of gears disposed about the pinion shaft, and an exterior drum driven by the pinion assembly, an improved main shaft retaining means permitting removal of the main shaft without removing the winch from the deck, comprising:

a circumferential ridge on the main shaft;

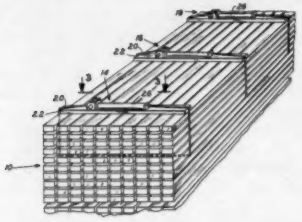
a generally flat keeper member oriented horizontally within the winch, having a retaining edge engaging the main shaft, positioned above the upper side of the main shaft ridge in the assembled winch; and

means associated with the pinion assembly for retaining the keeper member in position in engagement with the main shaft when the winch is assembled, and for permitting removal of the keeper member after the drum is removed.

4,211,389
RESILIENT ARTICLE STACK BINDER

Lawrence A. Frey; Robert E. Harrison, both of Portland, and James E. McGriff, Oregon City, all of Oreg., assignors to Timber Conversion, Inc., Portland, Oreg.

Filed Apr. 27, 1978, Ser. No. 900,473
Int. Cl.[2] B60P 7/12; B61D 45/00; B66D 1/48
U.S. Cl. 24—269 3 Claims

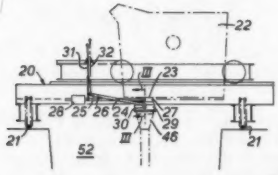


1. Apparatus for binding a group of articles comprising
an elongate flexible element which may extend about such articles,
a takeup device for taking up a portion of such flexible element to reduce the effective length of said element,
an elongate spring,
an elongate spring guide, one end of which is operatively connected to said takeup device, within which said spring is mounted,
an abutment, formed at the other end of said guide, which one end of said spring engages,
a head secured to the other end of said flexible element, which head extends into said guide to engage the end of said spring opposite its abutment-engaging end to compress said spring when urged toward said abutment, and
limiting means interposed between said head and said abutment operable to limit the deflection of said spring.

4,211,390
APPARATUS FOR SHIELDING MOLTEN METAL DURING TEEMING

Brian Poole, South Leverton, and Philip J. Young, Tuxford, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 7, 1979, Ser. No. 36,487
Int. Cl.[2] B22D 11/10, 23/00; C22B 9/00
U.S. Cl. 266—207 7 Claims

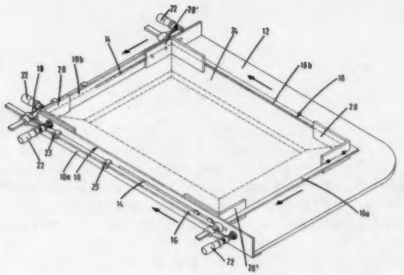


1. Apparatus for shielding molten metal during teeming which apparatus comprises a first arm pivotably mountable on a carriage for carrying a ladle, a second arm pivotably mountable on said carriage, a first cylinder open at both ends, connected to said first arm and having one end which, during teeming, is urged against the pouring spout on the bottom of a ladle mounted on said carriage, a second cylinder open at both ends, connected to said second arm, and moveable relative to said first cylinder to vary the distance between said first and second cylinders, and means to introduce a shielding gas into the interior of said cylinders, the arrangement being such that, in use, after the pouring spout of a ladle is arranged over a pouring trumpet, said arms can be moved so that said first and second cylinders define a passageway between the pouring spout on the ladle and the pouring trumpet into which shielding gas can be introduced via said means to inhibit air coming into contact with molten metal as it passes through said passageway.

4,211,391
CLAMPING FRAME FOR MAKING RECTANGULAR FRAMES, PARTICULARLY PICTURE FRAMES

Peter Strasser, Münchner Strasse 31, D-8184 Gmund, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 48,043
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827772
Int. Cl.[2] B25B 5/14
U.S. Cl. 269—41 6 Claims



1. A clamping frame for making rectangular frames, particularly picture frames, characterised in that a first frame portion (10) comprising two limbs (10*a*, 10*b*) at right-angles to each other and a second frame portion (16) comprising two limbs (16*a*, 16*b*) at right-angles to each other together define a closed rectangular clamping frame, the second frame portion (16) being displaceable relatively to the first frame portion (10) and the limbs (16*a*, 16*b*) of the second frame portion (16) project outwardly beyond the limbs (10*a*, 10*b*) of the first frame portion (10), that pull rods (18) are provided parallel to the limbs (10*a*, 10*b*) of the first frame portion on the outside thereof, which rods intersect at the corner of the first frame portion (10) and engage the projecting limb sections of the second frame portion (16), and that clamps (22) are provided for tightening the second frame portion (16) to the first frame portion (10), which clamps can be applied to the sections of the limbs of the second frame portion (16) projecting beyond the limbs of the first frame portion (10) as well as to the pull rods (18) and which are supported on the outside of the limbs of the first frame portion (10).

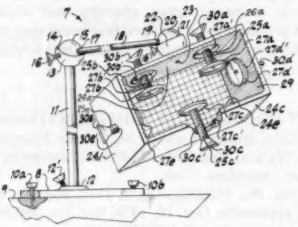
4,211,392
ADJUSTABLE HOLDER FOR MOLDING DENTURES

Richard De Santis, 3533-12th Ave., Brooklyn, N.Y. 11218

Filed Jan. 22, 1979, Ser. No. 5,166
Int. Cl.[2] B25B 1/20
U.S. Cl. 269—75 2 Claims

1. An adjustable dental mold flask holder device comprising in combination: base means for anchoring securely base structure to a substrate surface; first rod-mounting means for mounting a first rod revolvably onto an upper portion of said base means; a first rod extending longitudinally uprightly having a lower rod end thereof revolvably mounted by said first rod-mounting means onto said base means; first swivel means mounted on an upper rod end of said first rod, for swivelly-mounting a second rod onto said upper rod end, and for alternately securing immovably and releasing for adjusting move-

ment of the second rod; the second rod extending longitudinally away from and having a second rod lower and mounted swivelly on said upper rod end of said first rod by said first swivel means; second swivel means mounted on a second upper rod end of the second rod, and for alternately securing immovably and releasing for adjusting movement of and swivelly mounting a holder structure; and a holder means including the holder structure, for alternately clamping securely onto an object to be held and releasing for removal of or receipt of an object, said holder means including opposing supports extending substantially parallel to one-another and permanently rigidly fixed in spaced-apart relationship to one-another, at least one of said opposing supports having mounted thereon an

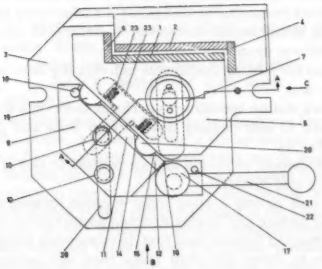


adjustable clamp movable between alternate clamping positions toward and away from the other one of the opposing supports, the opposing supports and all of said adjustable clamps being jointly positioned and having gripping surfaces such that an object may be securely releasably gripped, said holder means being mounted on said second upper rod end by said second swivel means, said holder means including two of said adjustable clamps in at-least two sets of said opposing supports arranged with the opposing supports of one set extending substantially transversely to another set of the opposing supports and thereby the two sets of opposing supports substantially circumscribing a space within which an object is to be gripped and supported by said adjustable clamps.

4,211,393
VISE

Terence B. Olivant, 17 Evington Close, Leicester, England

Filed Dec. 22, 1978, Ser. No. 972,203
Claims priority, application United Kingdom, Dec. 22, 1977, 53377/77
Int. Cl.[2] B25B *5/14*
U.S. Cl. 269—111 **11 Claims**

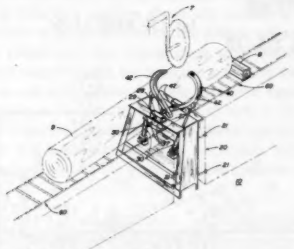


1. A vise for holding a row of discrete articles, comprising:
a base plate;
a front vise jaw:
a first side jaw fast to one end of the front vise jaw;
a rear vise jaw spaced from the front jaw;
a second side jaw fast to one end of the rear vise jaw and facing the first side jaw across the space between the front and rear jaws, the rear vise jaw and second side jaw being secured fast to the base plate;
means mounting the front jaw and first side jaw to be linearly and angularly movable relative to the rear jaw and second side jaw, the mounting means being slidable over the base plate but retained in close contact with the base plate by means of a stud on the base plate overlying an upper surface of the mounting means; and
means for moving the mounting means towards the rear jaw and the second side jaw to effect clamping of a row of articles simultaneously between the front and rear jaws and along the length of the row between the first and second side jaws.

4,211,394
LOG CLAMPING APPARATUS

Harold J. Sampson, 636 California Way, Space 111, Longview, Wash. 98632

Filed Jun. 11, 1979, Ser. No. 47,034
Int. Cl.[2] B25B *1/04*
U.S. Cl. 269—239 **5 Claims**



1. A log clamping device comprising:
base support means;
jack means pivotally mounted to said support means;
log clamping means including at least two jaws pivotally connected to said jack means, each of said jaws including an upper substantially arcuate clamping portion and a rectilinear lower portion provided with a smooth upper, substantially planar, log-bearing surface operable to slidingly engage and lift a log received thereon, said jaws each pivotally engaging one another adjacent the terminal free end of said lower portion; and
control means for activating said jack means.

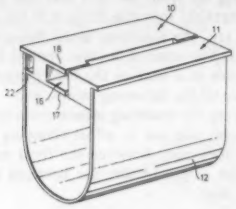
4,211,395
CONNECTOR TOOL

Ernest Edwards, Basingstoke, and Michael K. Jukes, Reading, both of England, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,709
Claims priority, application United Kingdom, Nov. 22, 1977, 48616/77
Int. Cl.[2] H01R *43/00*; B25B *9/02*
U.S. Cl. 269—254 R **4 Claims**

1. A tool for use in terminating a multi-conductor flat cable to a multi-way electrical connector, said tool comprising: two generally parallel jaws mounted adjacent to and parallel with each other, one of said jaws having a recess for receiving said connector therein and at least one of said jaws having a notch for receiving said cable therein; and a U-shaped spring strip

having each end secured to one of said jaws, said spring strip for urging said jaws toward each other thereby clamping said



connector in said recess and said cable together prior to and during termination of said cable on said connector.

4,211,396

WEB-FED ROTARY PRINTING PRESS

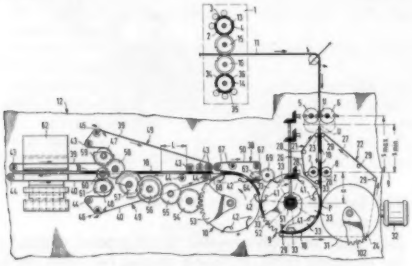
Horst B. Michalik, Hochberg, and Otto T. Weschenfelder, Wurzburg, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,342

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2737858

Int. Cl.[2] B41F *13/64*

U.S. Cl. 270—13 **1 Claim**



1. A web-fed rotary printing press assembly for printing a web, for severing the web at the proper locations after it has been printed, and for folding various sized printed products, said assembly comprising:

a printing press having one or more forme cylinders, each of said forme cylinders being of an evenly divisible peripheral size to receive varying numbers of printing formes, said varying numbers of printing formes being of different sizes to allow the printing of various sized products, the number of said printing formes secured to said peripheral surfaces of said forme cylinders defining the size of the printed product printed by the printing press;

a folder assembly to cut and fold the various sized products, said folder assembly including cross cutting cylinders, a first take over cylinder, a transfer cylinder, an accelerating conveyor and a longitudinal folding device; said take over cylinder being capable of alternatingly being switched between a collecting mode for collecting a plural number of said printed products together thereon and a non-collecting mode;

means for varying the distance between the axes of said cross cutting cylinders and said first take over cylinders, said distance depending on the size of the printed product;

a switchable gear unit for varying the peripheral speeds of said cross cutting cylinders, take over cylinder, and transfer cylinder in response to the number of printing formes secured to the peripheries of said forme cylinders, said cross cutting cylinders, take over cylinder and transfer cylinder all operating at the same selected peripheral speed with the selected peripheral speed being increased with increasing numbers of printing formes secured to said forme cylinders; and

means for varying the peripheral speed of said accelerating conveyor between a first speed which is the same as the peripheral speed of said cross cutting cylinders, take over cylinder and transfer cylinder when said take over cylinder is collecting and a second speed which is twice the peripheral speed of said cross cutting cylinders, take over cylinder and transfer cylinder when said take over cylinder is non-collecting, said accelerating conveyor delivering said printed products to said longitudinal folding device in a spaced array whereby said various sized printed products from said printing press may be severed from the web at the proper locations and folded.

4,211,397

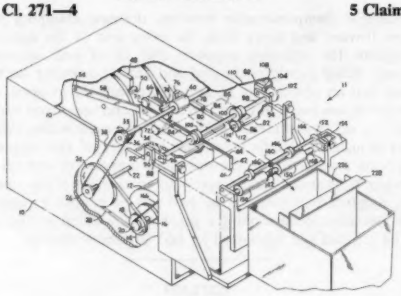
UNIT DOCUMENT FEEDING MECHANISM

Gary G. Hansen, Byram; Leonard M. Pengue, Huntington, and Theodore Watkin, Stamford, all of Conn., assignors to Pitney Bowes, Inc., Stamford, Conn.

Division of Ser. No. 712,233, Aug. 6, 1976, Pat. No. 4,143,981. This application Oct. 10, 1978, Ser. No. 950,081

Int. Cl.[2] B65H *5/06*

U.S. Cl. 271—4 **5 Claims**



1. Unit document conveying apparatus for conveying documents to and from a work station, the combination comprising:

A. a housing having:

1. a platform;
2. a first motor supported by said housing;
3. document drive means located at said platform;
4. means connected to said motor for selectively operating said drive means to convey a document across said platform upon actuation thereof;

B. means for feeding documents individually onto said platform; and

C. a work station operative to perform work on a document secured to said housing downstream from said platform and having:

1. a document receiving surface parallel to and in tandem with said platform;
2. a shaft having a drive roller thereon located adjacent said surface and having first and second drive members connected thereto, said first drive member being operative to drive said shaft faster than said second drive member, said second drive member having a one way clutch associated therewith that allows said faster rotating drive member to override said slower rotating drive member to rotatably drive said shaft, said drive roller engaging documents to transport the same across said document receiving surface at one speed when driven by said first drive member and at a slower speed when driven by said second drive member;

3. a second motor;
4. first drive connection for selectively connecting said first drive member to said first motor; and
5. second drive connection connecting said second drive member to said second motor.

4,211,398

FEEDERS FOR CARDBOARD AND LIKE BLANKS

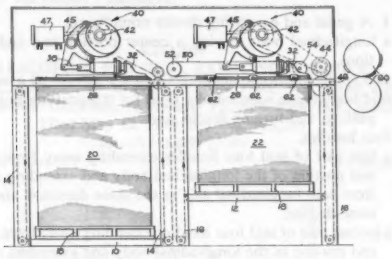
Thomas D. Bishop, Birmingham, England, assignor to The Deritend Engineering Company, Birmingham, United Kingdom

Continuation-in-part of Ser. No. 786,991, Apr. 13, 1977. This application Sep. 14, 1978, Ser. No. 942,465

Claims priority, application United Kingdom, Apr. 22, 1976, 16297/76

Int. Cl.² B65H *3/08*

U.S. Cl. 271—9 **2 Claims**



1. A pair of feeders arranged in line and adapted to the use alternately, each feeder comprising

(a) a platform supporting a stack of blanks to be fed, (b) means for raising the platform to maintain the top of the supported stack at about a predetermined height, (c) a stationary head located above the platform and stack and provided with inlet openings connected to a negative pressure source for sucking a blank into contact with the head, and (d) a reciprocating suction box provided in the head and having its surface substantially co-planar with the surface provided with the stationary inlet openings, for feeding the blanks onwards the mechanism being provided with additional means for transferring blanks one by one in the onward feed direction when the rear of the stacks is in use.

4,211,399

MULTIPLE SIZE PLATE REGISTRATION APPARATUS AND METHOD

Norman L. McGowan, Romoland, Calif., assignor to Eocom Corporation, Tustin, Calif.

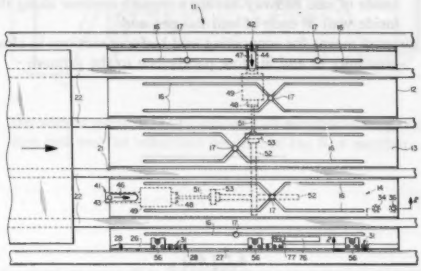
Filed Jun. 9, 1978, Ser. No. 914,283

Int. Cl.² B65H *9/04, 9/06, 9/08*

U.S. Cl. 271—232 **8 Claims**

1. In a multiple size plate registration apparatus for precisely registering plates, a platen having a planar surface of an area which is sufficiently large to support only one of said plates at a time, channels formed in the platen and opening through said planar surface in area of said platen which would be covered by any one of said plates, grooves formed in the platen spaced transversely of the platen, extending longitudinally of the platen and opening through the top planar surface, endless belts traveling in the grooves for carrying a plate onto the planer surface, first and second stop pins mounted in the platen on the forward extremity of the same, means for causing said stop pins to be selectively movable between a retracted position below said planar surface and an extended position above said planar surface, guide means extending longitudinally of the platen on one side of the platen and snubbing means for snubbing a plate on said platen against said guide means and against any one of said first and second pins extending above said surface whereby at least two different sizes of plates can be precisely positioned on said platen and means for supplying a vacuum to the grooves after the plate has been precisely positioned on the platen to permit operations to be carried out on the plate.

5. In a method for registering multiple sizes of plates on a planar surface of a platen having first and second stop pins mounted therein with each being movable between a retracted position below the planar surface and a position above the



planar surface and having a side guide, selectably positioning one of said stop pins to a position above the surface in accordance with a plate to be positioned on the platen, advancing a plate onto the platen and into engagement with the stop pin which has been raised above the surface, snubbing the plate against the stop pin and against the side guide for registering the plate, applying a vacuum to the plate to hold it firmly in place after it is registered, performing additional operations on the plate while it is held in place under a vacuum, retracting the stop pin and advancing the plate off of the platen.

4,211,400

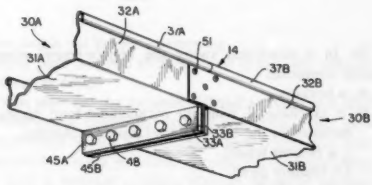
MODULARIZED SLIDE

Sunnie Ray, Litchfield, Mich., assignor to Game Time, Inc., Fort Payne, Ala.

Filed Aug. 11, 1978, Ser. No. 932,703

Int. Cl.² A63G *21/02*

U.S. Cl. 272—56.5 R **9 Claims**



8. A playground slide, comprising:

a plurality of bedway sections and an exit section each having an upwardly facing and smooth bedway floor and laterally spaced sidewalls each having smooth inwardly facing surfaces and a rounded upper edge;

modularized connecting means for connecting said plurality of bedway sections into an end-to-end relation and said exit section to the lowermost one of said bedway sections along the length of said playground slide, said connecting means each including integral flange means at the opposite longitudinal ends of each of said bedway sections which are identical to each other to facilitate the interchanging of said end-to-end order of said bedway sections, said flange means including at least a pair of flanges defined by an integral, longitudinal extension of said sidewalls be-

yond the opposite terminal ends of said bedway section, said end-to-end relation comprising the placement of said flanges into side-by-side overlapping relation, the innermost one of said flanges being integral with the uppermost one of said bedway sections along the length of said playground slide and fastening means defining a plurality of axially aligned holes in each of said side-by-side flanges and a plurality of fasteners received in said holes to fasten said flanges together, the portion of said fasteners on the inside of said bedway having a smooth contour along the inside wall of each of said flanges; and

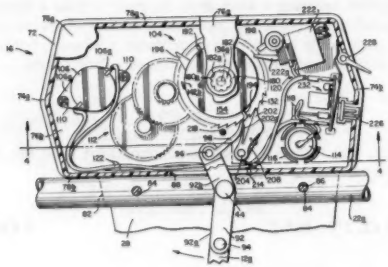
support means for supporting said bedway sections in close proximity to and in close parallelism to the ground.

4,211,401

SWING HAVING ELECTRICALLY REWOUND SPRING MOTOR DRIVE

Joel C. Cunard, Bedford, Pa., assignor to Hedstrom Co., Bedford, Pa.

Filed Nov. 13, 1978, Ser. No. 960,053
Int. Cl.[2] A63G *9/16*; F03G *1/08*
U.S. Cl. 272—86 **23 Claims**



16. In a motorized swing the improvement wherein the motor comprises

A. a housing,

B. a mechanical wind-up escapement-type spring motor mounted in the housing, said motor including

1. a ratchet wheel,

2 a retainer pawl,

3. means for biasing the retainer pawl against the teeth of the ratchet wheel, and

4. a mainspring for urging the ratchet wheel into toothed engagement with the pawl during the winding cycle of the motor,

C. means for periodically rotating the ratchet wheel in the opposite direction to wind up said motor, said winding means including

1. a battery,

2. a DC electric motor,

3. means including a clutch for coupling torque between said electric motor and said ratchet wheel only during each said winding cycle, and

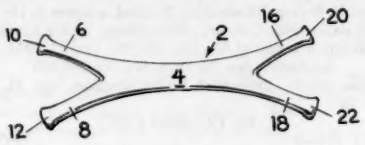
4. means including a switch for electrically connecting the electric motor to the battery at the beginning of each winding cycle and for disconnecting the electric motor from the battery at the end of each winding cycle.

4,211,402

GAME AND EXERCISING DEVICE, METHOD OF EXERCISING, AND METHOD OF PLAYING A GAME

Kevin T. Carroll, 747 Marietta Ave., Lancaster, Pa. 17603

Filed Jan. 20, 1978, Ser. No. 870,878
Int. Cl.[2] A63B *21/28*
U.S. Cl. 272—93 **16 Claims**



1. A game and exercising device comprising:

a longitudinal body having a center portion and end portions,

said center portion extending along a longitudinal axis,

said body being substantially rigid for transmitting pushing, pulling, and turning forces, and

four handles,

a first pair of said four handles extending away from each end portion of the longitudinal body and extending away from said longitudinal axis in the same direction and the same degree,

a second pair of said four handles extending away from each end portion of the longitudinal body and extending away from said longitudinal axis in the same direction and degree and opposite to the direction and degree of said first pair of handles,

all of said handles being rigidly fixed with respect to each other and the body,

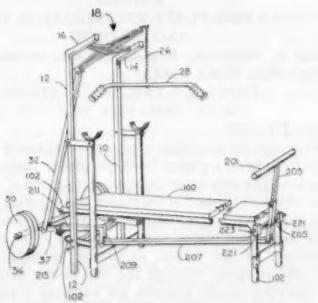
each handle being large enough to accommodate a hand, whereby a person can grasp a handle at each end of said longitudinal body.

4,211,403

WEIGHT LIFTING LEG EXERCISE DEVICE

Matthew Coffaro, 4190 Sierra Chapita, Tucson, Ariz. 85715, and Ronald L. Pelton, 7402 E. Thirty-eighth St., both of Tucson, Ariz. 85730

Filed Jul. 28, 1978, Ser. No. 929,124
Int. Cl.[2] A63B *21/00*
U.S. Cl. 272—134 **3 Claims**



1. In combination, a weight exercise device for attaching to a weight-lifting bench, the weight exercise device comprising cross arm means to receive a person's members; first lever means attaching at a first end to said cross arm means, said first lever means including first fulcrum means operably attached to a first end of the weight-lifting bench for receiving an interme-

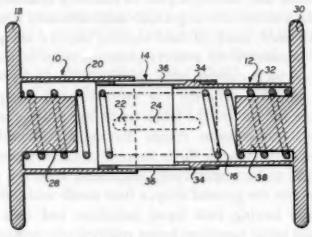
diate portion of the first lever means, said cross arm and a portion of said first lever means extending above the bench; and weight-lifting means adapted to receive associated weights, said weight lifting means also including second lever means pivotally attached to the weight-lifting bench adjacent the second end thereof, said second lever means first end pivotally attached to said first lever means second end through a substantially rigid connecting member, the first lever means and said second lever means comprising, respectively, only one single member each, and said second lever means second end being attached to the associated weights whereby when a person pivotes said cross arms means, the movement of the cross arms means is transmitted through the first lever means, the connecting member and through the second lever means to the attached associated weights to raise or lower the associated weights by pivoting of the second lever means in response to movement of the connecting member and thus provide exercises for the person's members.

4,211,404

TELESCOPING PHYSICAL EXERCISING DEVICE

Frank C. Blowsky, 46-16 195th St., New York, N.Y. 11358, and Kenneth B. Glickman, 11 Waverly Pl., New York, N.Y. 10003

Filed May 12, 1978, Ser. No. 905,235
Int. Cl.[2] A63B *21/00*
U.S. Cl. 272—141 **4 Claims**



1. A physical exercising device comprising: an outer member having a handle portion; an inner member having a handle portion; a compression spring connected between the outer member and the inner member and in cooperative relation with the outer member and the inner member whereby the compression spring will be compressed when the outer member and inner member are caused to be moved with respect to each other; an intermediate member located between the outer member and the inner member which is of smaller cross section than the outer member and of larger cross section than the inner member; and said outer member having means which cooperate with the intermediate member and said inner member having means which cooperate with the intermediate member so that the outer member may slide over the intermediate member and the inner member may slide within the intermediate member.

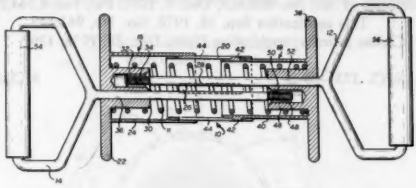
4,211,405

PHYSICAL EXERCISING DEVICE

Frank C. Blowsky, 46-16 195th St., New York, N.Y. 11358; Kenneth B. Glickman, 11 Waverly Pl., New York, N.Y. 10003, and Alan D. Iscoe, 154-36 Horace Harding Blvd., Flushing, N.Y. 11367

Filed May 12, 1978, Ser. No. 905,236
Int. Cl.[2] A63B *21/00*
U.S. Cl. 272—141 **16 Claims**

1. A physical exercising device comprising:
a first member;
a second member;
a compression spring located between the first and second members so that the compression spring will be compressed when the first member and second member are caused to be moved with respect to each other; a first pull member having one free end and the other end secured to



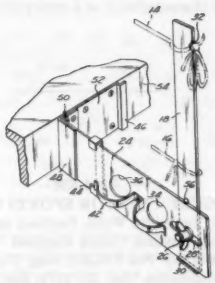
the second member, and a second pull member having one free end and the other end secured to the first member.

4,211,406

TABLE TENNIS NET HOLDER

Layton S. Roesler, and Patricia I. Roesler, both of 3515 Mound, Ventura, Calif. 93003

Filed Jun. 23, 1978, Ser. No. 918,397
Int. Cl.[2] A63B *39/00*
U.S. Cl. 273—30 **8 Claims**



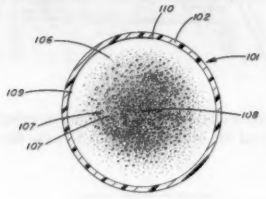
1. A table tennis net holder comprising:
an attaching plate adapted to be secured to the side edge of a table tennis table;
an extension plate having an inner end and an outer end, said inner end being connected to said attaching plate, said extension plate having a first longitudinal center axis, said extension plate being pivotable in respect to said attaching plate from a stowage position directly adjacent said attaching plate to a net supporting position approximately ninety degrees displaced from said stowage position;
an upstanding arm connected by connecting means to said extension plate at said outer end, said upstanding arm having a second longitudinal center axis, said second longitudinal center axis to be located approximately ninety degrees to said first longitudinal center axis with said extension plate in said net supporting position, said upstanding arm to be connectable to a table tennis net; and
said upstanding arm being adjustably mounted in respect to said extension plate by adjustment means so as to vary the established position of said upstanding arm in a direction along said first longitudinal center axis, said adjustment means being movable to fix said upstanding arm in an established position, and locking means connected to said upstanding arm for locking said upstanding arm in said established position.

4,211,407

GAME BALL

Julius Tomar, Port-au-Prince, Haiti, assignor to Home of Champions, Port-au-Prince, Haiti

Division of Ser. No. 858,415, Dec. 7, 1977, Pat. No. 4,144,297. This application Sep. 18, 1978, Ser. No. 943,145
Claims priority, application Haiti, Dec. 28, 1976, 139
Int. Cl.[3] A63B *37/06*
U.S. Cl. 273—60 B **5 Claims**



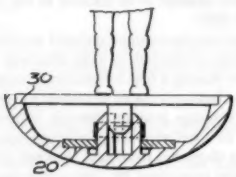
1. In a baseball comprised of a spherical core and a cover, the improvement wherein said core consists essentially of a single spherical mass of partially blown ethylene vinyl acetate copolymer thermoplastic resin having 12% to 30% by weight polymerized vinyl acetate units therein, with foam in the center of said core gradually reducing in cell size radially outwardly to a skin having a density substantially equal to the density of said copolymer; said baseball having essentially the same playing characteristics as a conventional baseball.

4,211,408

FIGURE UNIT FOR SPORTS GAMES

Roy P. Tickle, Tunbridge Wells, England, assignor to Subbuteo Sports Games Limited, United Kingdom

Continuation of Ser. No. 826,313, Aug. 22, 1977, abandoned. This application Mar. 23, 1979, Ser. No. 23,258
Int. Cl.[2] A63H *15/06*
U.S. Cl. 273—85 R **4 Claims**



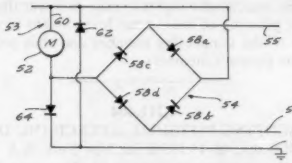
1. In a figure unit for a game where the figure unit is of the type having a figure disposed on a self righting mounting comprised of a base cup whose top is closed by disc means on which the figure stands, the improvement wherein the disc means is secured to the base cup by a concealed connection within that cup, the concealed connection comprising components extending upwardly from the bottom of the base cup and downwardly from the underside of the disc means, said components comprising a spigot, a socket and a ring, said spigot being engaged in the socket, said socket being axially split into resiliently yielding segments, and said ring surrounding the split socket and limiting the resilient yielding of the segments.

4,211,409

TOY VEHICLE GAME AND DRONE VEHICLE

Edwin A. Nielsen, Oceanside, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Division of Ser. No. 824,668, Aug. 15, 1977, Pat. No. 4,141,552, which is a continuation-in-part of Ser. No. 747,442, Dec. 6, 1976, Pat. No. 4,078,798. This application Oct. 10, 1978, Ser. No. 952,893
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.[2] A63F *9/14;* **A63H** *18/12*
U.S. Cl. 273—86 B **4 Claims**



4. In a toy vehicle game including a guide track defining a pair of lanes along which two toy vehicles may move in side-by-side relation and having a pair of laterally spaced current supply contact strips and a ground strip similarly arrayed in each lane thereof, each of said current supply strips being electrically connected to a corresponding strip in the other lane and to which current of varying value and reversible polarity is supplied, wherein the improvement comprises a drone vehicle for use on the track including a drive wheel, a drive motor, transmission means drivingly connecting the motor to the drive wheel, three current collectors positioned on the vehicle to be respectively associated with the current supply strips and the ground strip, a four diode rectifier bridge in the vehicle having two input junctions and two output junctions, said input junctions being respectively connected to the two current collectors associated with the current supply strips and said output junctions being respectively connected to opposite sides of the motor; and a pair of additional oppositely arranged diode rectifiers respectively connected between said third current collector and opposite sides of said motor whereby current of predetermined polarity is supplied to the motor regardless of the polarity collected by said first and second collectors to always drive the vehicle in the same direction.

4,211,410

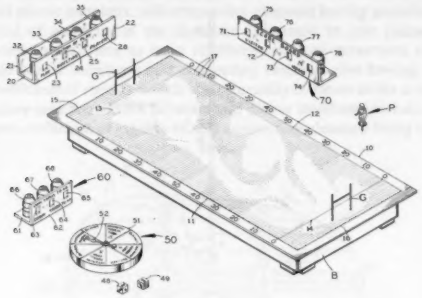
SIMULATED FOOTBALL GAME

William Smith, 7724 Lucerne, Cleveland, Ohio 44130

Filed Feb. 21, 1979, Ser. No. 13,788
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—94 **9 Claims**

1. In a simulated football game having:
a game board displaying a football field and having openings spaced apart at predetermined intervals both longitudinally and laterally of the field;
and a plurality of player pieces which are insertable in and removable from said game board openings to simulate football players making up offensive and defensive teams on the field;
the improvement which comprises:
a play selector having a plurality of manually changeable selection devices for designating respectively
(a) any one of a plurality of possible plays by the offensive team;
(b) any one of a plurality of possible directions of the designated play on the playing field; and
(c) any one of a plurality of players on the offensive team

who will have the ball upon successful completion of the designated play;



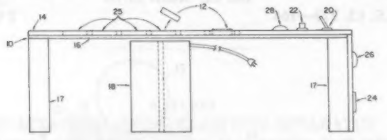
and numerical chance means for determining the yardage of the designated play.

4,211,411

APPARATUS FOR ELECTROMAGNETICALLY GENERATING FIELDS FOR REPELLING OR ATTRACTING PERMANENT MAGNETIC FIELDS FOR THE PURPOSE OF ENTERTAINMENT

Charles E. McDaniel, and Yvonne McDaniel, both of 4300 Alexander St., Bakersfield, Calif. 93307

Filed May 19, 1977, Ser. No. 798,586
Int. Cl.[2] A63B *67/00*
U.S. Cl. 273—345 **9 Claims**



1. An apparatus suitable for playing a game comprising:
(a) movable permanent magnets;
(b) a mold on which the permanent magnets are placed, the mold being of a non-magnetic material, the mold including recesses into which the magnets can be positioned; and
(c) a movable electromagnetic generator for dispersing a magnetic field, the generator being provided with means for momentarily energizing the generator and means for reversing the polarity of the generator, wherein the electromagnetic generator is capable of being moved to a position relative to a selected one of said permanent magnets that when the electromagnetic generator is momentarily energized it repels the selected permanent magnet so that the selected permanent magent can become attached to an adjacent permanent magnet.

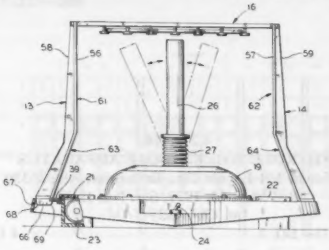
4,211,412

FIGHTING U.F.O'S

Gordon A. Barlow, Skokie, and Anthony T. Janiszewski, Elmwood Park, both of Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Sep. 1, 1978, Ser. No. 938,809
Int. Cl.[2] A63B *67/00;* **A63F** *9/00*
U.S. Cl. 273—424 **10 Claims**

1. A game device featuring opposing players manipulating flying saucers and attempting to "shoot down" the opposing flying saucers,
said game device comprising:
a base unit;
air compressor means for generating air streams within said base unit;
air tube means for directing said air stream;
flying saucer means,
said flying saucer means rendered mobile by said air stream;



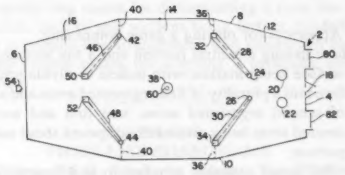
ceiling structure for limiting the upward movement of said flying saucer means; and
means for moving said air tube means to control the direction of movement of said flying saucers.

4,211,413

FIELD GAME

Alberto H. Arzola, 40A Charles St., Jersey City, N.J. 07307

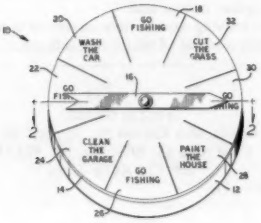
Filed Aug. 15, 1978, Ser. No. 933,717
Int. Cl.[2] A63B *71/02*
U.S. Cl. 273—411 **10 Claims**



1. A game comprising a ball field and playing apparatus, said ball field comprising a substantially flat surface having first and second end lines parallel to each other and spaced from each other by about three hundred feet and connected to each other at each end thereof by first and second side lines, said surface including first, second and third playing zones, each of said zones being of a length of about one hundred feet, lines proximate said first end line delineating a starting point for a pair of offensive team runners, first and second circles disposed in said first zone delineating stations for defensive team members, first and second base pads disposed in said first zone, said circles being disposed generally between said starting point and said base pads, lines extending toward said second zone and outwardly from said base pads delineating first and second safety lanes, respectively, first and second bases disposed respectively at the outward ends of said safety lanes, said first and second bases being at the juncture of said first and second zones, first cross lines on said surface delineating said juncture, a third circle disposed in the center of said surface, second cross lines on said surface delineating a juncture of said second and third zones, third and fourth base pads disposed on said second and third zones' juncture, lines extending toward said second end line and inwardly from said third and fourth base pads delineating third and fourth safety lanes, third and fourth bases disposed respectively at the inward ends of said third and fourth safety lanes and in said third zone, and a delineation of "home" disposed beyond said second end line and aligned with the center of said second end line, and said playing apparatus comprising a flexible pole upstanding from the center of said third circle, a game ball, said pole being at its free and adapted to releasably retain said ball thereon, and barrier means dis-

posed at said second end line and between said third and fourth bases and said delineation of "home".

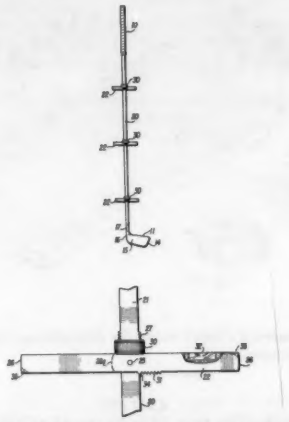
4,211,414
WHEEDLE WHEEL GAME APPARATUS
John C. Moodt, 101 Loyola Cir., Enterprise, Ala. 36330
Filed Mar. 12, 1979, Ser. No. 19,304
Int. Cl.[2] A63F *5/04*
U.S. Cl. 273—141 A **4 Claims**



1. Apparatus for playing a game comprising:
a base having a central portion and a top surface, said top surface being marked with indicia to divide said top surface into a plurality of first segmented areas and a plurality of second segmented areas, said first and second segmented areas being alternately disposed about said central portion;
pointer means rotatably attached to said central portion of said base for selectively indicating one of said plurality of said first and second segmented areas, said pointer means having a first orientation and an inverted orientation; and
a plurality of magnets, each having opposite poles of magnetic flux, said magnets being operatively disposed on said base and said pointer means such that said pointer means indicates only said first segemented areas when said pointer means is in said first orientation and said pointer means indicates only said second segmented areas when said pointer means is in said inverted orientation.

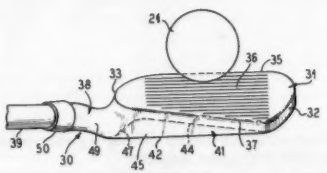
4,211,415
GOLF CLUB COMBINED WITH FOLDABLE EXTENSIONS FOR SURVEYING GREENS
Calvin E. Lindo, 4615 Hillside Rd., SE., Washington, D.C. 20019
Filed Jan. 22, 1979, Ser. No. 5,227
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—162 B **10 Claims**

9. A golf club which comprises a grip, a shaft means extending from said grip, and a club head connected to said shaft means opposite said grip, said shaft means being provided with a plurality of ribs which are connected thereto and are movable from a first position wherein said ribs are substantially



aligned with said shaft means to a second position wherein said ribs extend at a right angle relative to said shaft means.

4,211,416
GOLF CLUB
Arthur P. Swanson, 1454 Estate La., Glenview, Ill. 60025
Filed Nov. 22, 1978, Ser. No. 962,880
Int. Cl.[2] A63B *53/04*
U.S. Cl. 273—164 **3 Claims**

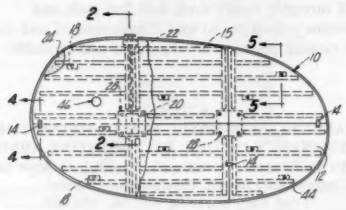


1. A lofted golfing iron which comprises a blade having a heel, a toe of greater height than the heel, a bottom sole having a front edge, an inclined striking face between the heel and the toe extending upwardly and rearwardly from the front edge of the sole, an inclined back face extending upwardly and rearwardly from the sole, a hosel extending rearwardly from the back face of the blade at the heel end thereof and thence curved upwardly and forwardly of the heel, a shaft secured to the upper end of the hosel, the axis of said shaft lying in a plane extending through the longitudinal mid-portion of the blade, and an integral ledge extending rearwardly from the back face of the blade along the top thereof and level with the top of the blade increasing in width from the toe to the heel and defining a rear sighting edge parallel with the front edge of the sole.

4,211,417
PRACTICE PUTTING GREEN
Glen Brown, 1316 Brook La., Rochester, Mich. 48063
Filed Aug. 21, 1978, Ser. No. 935,162
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—176 H **6 Claims**

1. A putting green which is contourable relative to a reference surface, comprising a playing surface composed of a plurality of planar members of sufficient rigidity to support the weight of a player, means supporting said playing surface

above the reference surface, said planar members being disposed in adjacent contacting relationship, connecting elements joining said planar members together along the boundaries of said planar members, said connecting elements having a coefficient of elasticity in the direction tangential to said planar members sufficient to resist relative horizontal movement of said planar members, said connecting elements also having a coefficient of rigidity which is substantially constant in the area where said boundaries between said planar members intersect, said coefficient of rigidity of said connecting elements being of



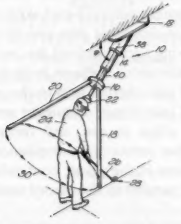
a value such that the effective coefficient of rigidity of said playing surface along said boundaries between adjacent planar members is less than the coefficient of rigidity of said adjacent planar members, a resilient covering on said planar members to form a continuous playing surface, and means to movably and forcibly deflect said planar members at selected locations thereon, said deflecting means acting to deflect said playing surface at said boundaries a greater amount than the planar members adjacent thereto to vary the contour of said playing surface.

4,211,418

UNATTACHED SWING TEACHING APPARATUS

Jess Oppenheimer, 549 Moreno Ave., Los Angeles, Calif. 90049

Filed Feb. 9, 1979, Ser. No. 10,554
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—186 R **14 Claims**



1. An unattached swing teaching apparatus rotatable in response to the swinging of a generally rod-like object, the swing teaching apparatus being adapted for guiding the object through a predefined arcuate path, the swing teaching apparatus comprising:

support means;

rotating means rotatably attached to and supported by the support means; and

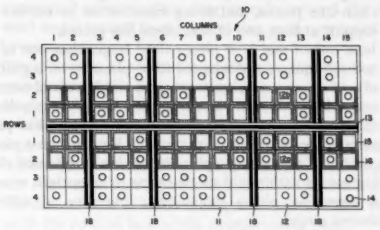
guide rod means fixed for rotating with the rotating means, the guide rod means positioned for being intermittently contacted and rotated as the object is swung for guiding the object through the predefined arcuate path.

4,211,419

GAME BOARD AND APPARATUS

Russell E. Larsen, 7034 Etiwanda, Apt. #8, Reseda, Calif. 91335

Filed Dec. 5, 1977, Ser. No. 857,586
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—248 **18 Claims**



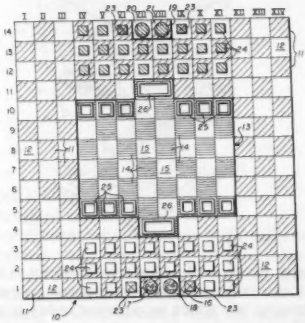
9. In a game apparatus, a gameboard comprising a side-by-side arrangement of pairs of columns, at least some of said pairs of columns being grouped and segregated into side-by-side column combinations having differing numbers of columns, each pair member being aligned with its corresponding pair member and being separated therefrom by a dividing line, which dividing line, in combination with other dividing lines for other pairs of columns separates said board into opposing sides for use by opposing players, each column member having a forward section and a rearward section, said forward section being positioned in proximate location to said dividing line and having highlighting means for distinguishing it from the rearward section, each of said sections being further divided into segments in column-like arrangement, said gameboard further comprising chance means for selecting a particular column combination.

4,211,420

CHESS-LIKE BOARD GAME

Luis E. Quiroz, 901 W. Cavalcade, Houston, Tex. 77009

Filed Aug. 21, 1978, Ser. No. 935,127
Int. Cl.[2] A63F *3/02*
U.S. Cl. 273—260 **8 Claims**



1. A chess-like board game for two players comprising:

a checkered board with rows and columns of bilaterally colored dark and light squares,

said board having a central area wherein the dark squares are of a different color from the color of the dark squares of the surrounding area designating a sea,

a plurality of chess-like pieces for each player for movement on said board, all the said chess-like pieces having bases of substantially the same size,

a plurality of boat pieces for each player for movement only in the sea of said board and incapable of indepentent movement,

said boat pieces being initially positioned at the boundary of said sea area, said boat pieces being bowl shaped with a single central recess in the top surface thereof, said recess being of a shape capable of receiving the bases of said chess-like pieces, and being constructed to receive and support at least one of said chess-like pieces,

at least one of said boat pieces sized larger than one of said colored squares and adapted to be placed over a plurality of said squares simultaneously, the single central recess in said at least one boat piece being of a size corresponding to the size of the bases of a plurality of said chess-like pieces placed side by side, such that said at least one boat piece is capable of supporting a plurality of side by side said chess-like pieces within said single recess in an upright manner,

said chess-like pieces including a plurality of different shaped pieces,

each different shaped chess-like piece having a different predetermined mode of movement and being moveable only in said surrounding area and into said boat pieces,

said boat pieces being moveable only when supporting one of said chess-like pieces and taking the mode of movement of the piece supported and thus providing the means for movement of said playing pieces across said sea area,

said boat pieces supporting a plurality of said chess-like pieces taking the mode of movement of each different shaped piece supported thereon, and

said board having marked areas on opposite sides thereof as target areas, the occupation of which by an opponent's pieces being the objective of the game.

4,211,421

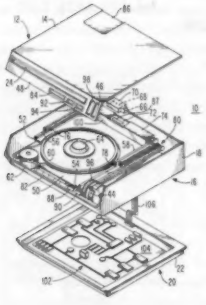
VIDEO DISC PLAYER HAVING ADJUSTABLE END-OF-PLAY SWITCH

Leslie A. Torrington, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,633

Int. Cl.[2] G11B *3/06*

U.S. Cl. 274—9 B **5 Claims**



1. A player for use with a disc record subject to removable occupancy of a protective caddy; said player comprising:

(A) a housing into which an occupied caddy is inserted to load the enclosed record into the player for playback;

(B) a turntable mounted in said housing for supporting and centering said inserted record;

(C) means for rotating said turntable;

(D) a signal pickup for recovering prerecorded information from a turntable-supported record during playback;

(E) a carriage for supporting said signal pickup;

(F) means for translating said carriage during playback along a first path toward the center of said turntable in correlation with the speed of rotation of said turntable;

(G) a movable member mounted in said housing for motion along a second path;

(H) a stop element;

(I) a switch element; wherein one of said elements is secured to said carriage, and the other of said elements is secured to said movable member;

(J) means, subject to engagement with said caddy during a caddy insertion, for selectively positioning said movable member along said second path for varying the point at which the carriage-secured element engages the member-secured element during translation of said carriage toward said turntable center along said first path; and

(K) means responsive to said engagement of said elements for causing cessation of rotation of said turntable.

4,211,422

DAMPING APPARATUS FOR DAMPING THE RESONANCE OF DISC RECORD TONE ARMS

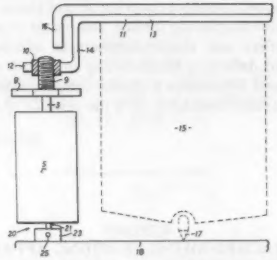
Alexander R. Rangabe, Portsmouth, England, assignor to Zerostat Components Limited, Huntingdon, England

Filed May 17, 1978, Ser. No. 906,865

Claims priority, application United Kingdom, Jun. 1, 1977, 23258/77; Jan. 11, 1978, 1097/77

Int. Cl.[2] G11B *3/10*

U.S. Cl. 274—23 R **11 Claims**



1. In a damping apparatus for damping the resonance of a disc record tone arm, comprising first and second relatively movable elements in engagement with energy absorbing material therebetween, and skid means mounted on one of said elements for engagement, when in use, with the disc record surface, the improvement wherein said skid means comprises:

a cantilever arm anchored at one end thereof to said one element and having a longitudinal axis, wherein said cantilever arm has substantial stiffness both in the direction of the longitudinal axis thereof and in the plane, containing the longitudinal axis of said cantilever arm, normal to the record surface when in use, and further wherein said cantilever arm has substantial compliance transversely to said cantilever arm in the plane, containing the longitudinal axis thereof, parallel to the record surface when in use; and

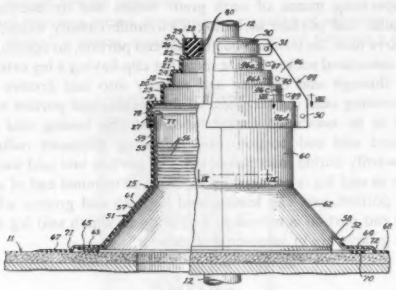
a skid pad connected to said cantilever arm at the end thereof opposite that end anchored to said one element, said skid pad having a first axis which extends transversely of the longitudinal axis of said cantilever arm, wherein said skid pad has substantial stiffness in the direction normal to the first axis thereof in the plane parallel to the surface of the record when in use,

wherein said skid means has torsional compliance sufficient to enable one end of the longitudinal dimension of said skid pad to surmount material projecting slightly above the record surface while exerting only a small force at the point of anchoring of said cantilever arm to said one element.

4,211,423
ROOF SEAL DEVICE

Raymond W. Resech, La Grange Park, Ill., assignor to Portals Plus, Inc., La Grange Park, Ill.

Continuation-in-part of Ser. No. 881,186, Feb. 27, 1978, abandoned. This application Dec. 29, 1978, Ser. No. 974,435
Int. Cl.[2] F16J 15/02; E04D 13/14
U.S. Cl. 277—212 FB 16 Claims

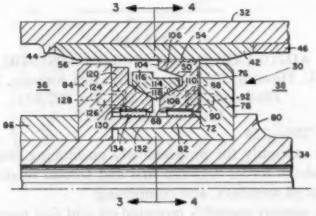


1. In a device for providing a weather-tight seal on a roof around an object projecting upwardly therefrom, a pair of complementary base sections adapted to be joined together along a generally vertical plane in approximate alignment with said object and together providing an upstanding generally tubular portion for surrounding the object and a peripheral flange portion extending outwardly from the lower end of said tubular portion for engaging the upper surface of roofing material about said object, seal means secured to the upper end of said tubular portion for sealing engagement with said object, each of said complementary base sections including a supporting part of a molded, strong and substantially rigid plastic material and a skirt part of a flexible elastomeric material on said support part, each of said skirt parts having edge portions arranged for overlapping interfitting engagement with edge portions of the skirt part of the other section, said skirt parts having peripheral edge portions together providing a downwardly facing surface adapted to engage an annular portion of the upper surface of roofing material about said object, and an adhesive material for sealing and bonding said downwardly facing surface of said skirt parts to said upper surface of said roofing material.

4,211,424
CENTRIFUGALLY COMPENSATED SEAL FOR SEALING BETWEEN CONCENTRIC SHAFTS

Philip C. Stein, c/o Stein Seal Company, 20th St. & Indiana Ave., Philadelphia, Pa. 19132

Filed Apr. 16, 1979, Ser. No. 30,212
Int. Cl.[2] F16J 15/42
U.S. Cl. 277—25 12 Claims



1. A seal between a hollow outer shaft and an inner shaft concentric with the outer shaft having a seal ring having a plurality of segments extending around the inner shaft, an outer circumferential face confronting the inner surface of the outer shaft, a first side face exposed to a region of high pressure between the shafts and a second side face having a portion thereof confronting a mating ring secured to the inner shaft and a portion thereof exposed to a region of lower pressure, and means for urging the outer face of the seal ring into conact with the inner surface of the outer shaft, characterized in that:

a segmented compensating ring extends around the inner shaft and is spaced from the seal ring in the region of high pressure,

a flange is secured to the inner shaft for limiting the axial movement of the compensating ring away from the seal ring,

said seal ring and said compensating ring each have a conical face with the said conical faces facing toward each other;

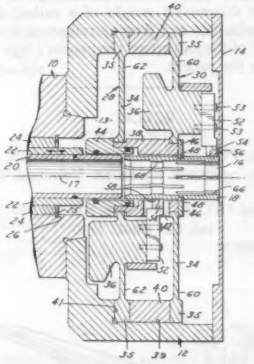
a continuous balancing ring lies between the seal ring and the compensating ring and has a conical face mating with the conical face of the seal ring and a conical face mating with the conical face of the compensating ring,

Whereby the centrifugal loading of the compensating ring urges the balancing ring towards the seal ring creating a radially inwardly force on the seal ring compensating for a portion of the centrifugal loading of the seal ring.

4,211,425
REPLACEABLE COLLET IN DOUBLE DIAPHRAGM CHUCK

James V. Halvorsen, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Division of Ser. No. 845,092, Oct. 25, 1977, Pat. No. 4,133,544. This application Aug. 21, 1978, Ser. No. 934,753
Int. Cl.[3] B23B 31/20
U.S. Cl. 279—46 R 2 Claims



1. A work holding collet, comprising:

(a) an elongated tubular body;

(b) a circumferential channel means on the outer diameter of said tubular body approximately midway between the ends of said tubular body for independent deflections of said front and rear ends of said collet;

(c) a plurality of slots extending from the front end of said body extending approximately midway to a point beyond said circumferential channel;

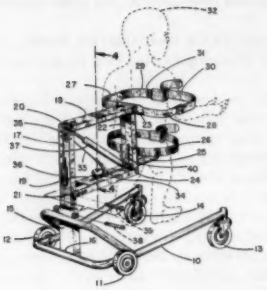
(d) a plurality of slots extending from the rear end of said body extending approximately midway to a point beyond said circumferential channel; and

(e) said channel comprising a pair of opposing parallel sidewalls connected by an annular wall parallel to said outer diameter of said tubular body and normal to said pair of opposing parallel sidewalls.

4,211,426
WEIGHT RELIEVING AMBULATOR

Wallace M. Motloch, Menlo Park, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.

Filed Jul. 31, 1978, Ser. No. 929,651
Int. Cl.[2] A47D 13/04; A61H 3/04
U.S. Cl. 280—87.02 W 13 Claims

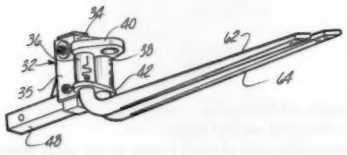


1. A weight relieving ambulator for aiding a patient to walk including, in combination:
(a) a wheel-supported frame;
(b) a body supporting harness;
(c) a parallelogram structure lying essentially in a vertical plane having rear and front portions connected to said frame and supporting harness respectively; and
(d) force providing means providing a tension force between points adjacent to the upper rear and lower front vertices of said parallelogram structure for applying a lifting force on the front portion of said parallelogram structure to oppose the downward weight of a patient held in said supporting harness and thereby relieve at least a part of the weight of the patient on the patient's legs to facilitate walking by the patient.

4,211,427
TRAILER HITCH

David A. Young, Plymouth, and Bruce S. Kimball, Ann Arbor, both of Mich., assignors to Hoover Universal, Inc., Saline, Mich.

Filed Oct. 10, 1978, Ser. No. 949,777
Int. Cl.[2] B60D 1/00
U.S. Cl. 280—406 A 10 Claims

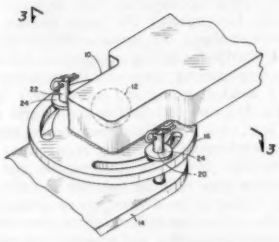


1. A trailer hitch having a ball for use with a socket of a trailer tongue to provide an articulated joint between an automobile on which the hitch is mounted and a trailer on which the trailer tongue is mounted, comprising a pair of substantially vertical-axis pivot means mounted adjacent to said ball at laterally opposite sides thereof, said hitch including a support member having a generally upright mounting face, each of said pivot means comprising a socket tube affixed along its length to said mounting face in a side-by-side relationship with the other socket tube, a pair of normally straight spring rods each having an angular end portion rotatably mounted in an associated one of said socket tubes for lateral pivotal movement of said rods, each of said end portions having a tapered terminal end, a pair of generally vertically disposed flexible suspension members having the corresponding ends thereof attached to the free ends of said rods, and means for mounting on the trailer tongue above said rods engaged by said flexible suspension members for bending said spring rods, said pivot means and said angular end portions having cooperating means preventing axial displacement of said angular end portions, the cooperating means of each pivot means and its associated angular end portion including a circumferentially extending groove near the terminal end of said end portion, an opening in the associated socket tube, a retaining clip having a leg extending through said opening and radially into said groove for preventing axial displacement of the angular end portion relative to its associated socket tube, said clip biasing said leg toward said end portion, said leg being displaced radially outwardly during insertion of said end portion into said socket tube as said leg is engaged by the tapered terminal end of said end portion, said clip biasing said leg into said groove when said end portion is moved to a position in which said leg and said groove are in substantial alignment.

4,211,428
TRAILER SAFETY HITCH

Nolla L. Barcus, 301 Spring Rd., Bartlesville, Okla. 74003

Filed Nov. 21, 1977, Ser. No. 853,222
Int. Cl.[2] B80D 1/06
U.S. Cl. 280—511 5 Claims



1. Auxiliary safety apparatus for a trailer hitch of the type wherein a vehicle frame mounted ball cooperates with a trailer tongue mounted socket, which comprises:
a substantially horizontal plate rigidly secured to the trailer tongue and having a pair of oppositely disposed arcuate slots therethrough in concentric relationship with the socket axis;
a pair of vertical pins having diameter less than the slot width mounted to the frame and extending upwardly through the respective arcuate slots; and
means separate from the frame for retaining the pins in said slots.

4,211,429
ADJUSTABLE SUSPENSION ASSEMBLY

Durrell U. Howard, 306 Krameria Dr., San Antonio, Tex. 78205

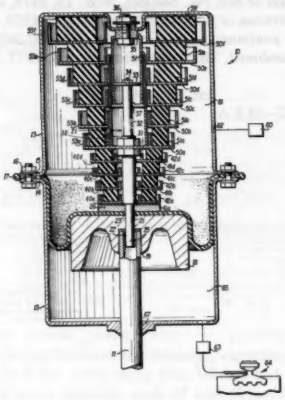
Filed Apr. 19, 1978, Ser. No. 897,891
Int. Cl.[2] B60G 11/22
U.S. Cl. 280—716 28 Claims

1. An assembly for progressively cushioning the transmission of shock forces between first and second relatively movable, spaced members, and comprising:
a first support assembly mounted on said first member and a second support assembly mounted on said second member;
a stack of separate elastomeric members arranged between said first and second support assemblies, with individual

elastomeric members increasing in size between opposite ends of said stack of elastomeric members;

retaining means for sequentially deforming said individual elastomeric members a predetermined amount in response to relative movement of said first and second support assemblies toward one another to progressively cushion the transmission of shock forces between said first and second spaced members;

said retaining means comprising a plurality of separate cup-shaped retaining members each positioned between a pair



of adjacently disposed elastomeric members with each retaining member including an end portion surrounding and initially spaced from an edge surface of one of said respective elastomeric members, with said end portion extending at a substantially perpendicular angle to a remaining portion of said retaining member;

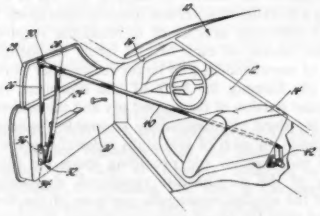
whereby each respective retaining member deforms an elastomeric member into abutting contact with the end portion of said respective retaining member to cushion a compressive force prior to transmission of said compressive force to an adjacently disposed retaining member.

4,211,430

PASSIVE LAP AND SHOULDER BELT SYSTEM

Richard E. Fancy, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1979, Ser. No. 24,108
Int. Cl.[2] B60R *21/02*
U.S. Cl. 280—802 **3 Claims**



1. In combination with the vehicle body having an occupant compartment in which an occupant seat is accessible through a door opening selectively opened and closed by a movable door, a passive occupant restraining belt arrangement comprising:

a lap belt and shoulder belt having inboard ends joined together at a juncture and outboard ends;

first means retractably mounting the outboard lap belt end on the door generally adjacent the occupant hip;

second means retractably mounting the outboard shoulder belt end on the door substantially at occupant shoulder height, said second retracting means having a relatively greater retracting effort than the first retracting means so that the juncture of the lap and shoulder belts is normally established at shoulder height to stow the lap belt vertically along the door;

a control belt connected to the juncture of the lap and shoulder belts;

third means retractably mounting the control belt on the vehicle body inboard the occupant seat and having a retracting effort relatively less than the retracting effort of the second means so that the control belt extends diagonally between the third means and the shoulder height location of the lap and shoulder belt juncture;

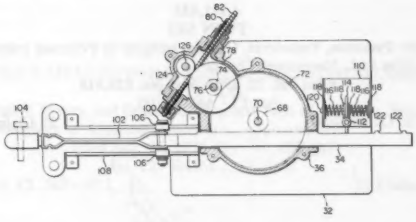
and drive means associated with the third means to forcibly retract the control belt against the bias of the first and second means when the door is closed so that the juncture of the lap and shoulder belts is positioned inboard the occupant to establish the lap and shoulder belts in their respective occupant restraining positions.

4,211,431

ACTUATOR DEVICE FOR SEAT BELT MECHANISM FOR MOTOR VEHICLE

Takeshi Awano, and Toshiyuki Komizo, both of Okazaki, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,866
Int. Cl.[2] B60R *21/02*
U.S. Cl. 280—804 **12 Claims**

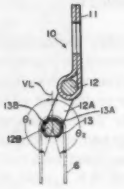


1. An actuator device for a seat belt mechanism for a motor vehicle, comprising a rack member slidably received in either one of a door and a vehicle body pivotally supporting the door to allow the door to be opened and closed, at least one link member connecting said rack member with the other of said door and body, a pivoting point of said link member relative to said other of the the door and body being offset from a pivoting axis of said door relative to said body, a seat belt support member operatively connected to said rack member so as to interlock with the latter and responsive to a relative movement between said one of the door and body and said rack member to move a seat belt into a restraining position and an unrestraining position with respect to a passenger, and at least one resilient member provided in said one of the door and body and operatively engaging with at least one of said rack and link members to provide a reaction force counteracting a movement of said rack and link members relative to said one of the door and body, whereby said door is held in a given open position by said reaction force.

4,211,432
WEBBING GUIDE

Haruki Furukawa, Toyota; Susumu Usami, Nagoya, and Junichi Nakaho, Ichinomiya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

Filed Dec. 28, 1978, Ser. No. 974,064
Claims priority, application Japan, Dec. 28, 1977, 52/176871[U]
Int. Cl.[2] A62B *35/00*
U.S. Cl. 280—808 2 Claims



1. A webbing guide provided with a contact portion having a center and side portion for receiving and guiding a webbing, wherein: a tape having two opposite ends made of low friction material bonded to the outer periphery of said contact portion, the region of said low friction material bonded to said contact portion covers respective side portions each extending over an angle at least equal to 90° from a vertical line passing the center of said contact portion with the ends of the tape adjacent to each other; and the opposite ends are chamfered at an angle D set at

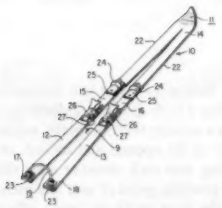
$$D \leqq \tan^{-1} F/S$$

where S is an internal stress of said low friction material and F is the bonding strength of the bonding agent used.

4,211,433
TWIN SKI

Alec Pedersen, Vancouver, Canada, assignor to Pedersen Industries Ltd., Vancouver, Canada

Filed Jul. 21, 1978, Ser. No. 926,818
Int. Cl.[2] A63C *5/00*
U.S. Cl. 280—601 39 Claims

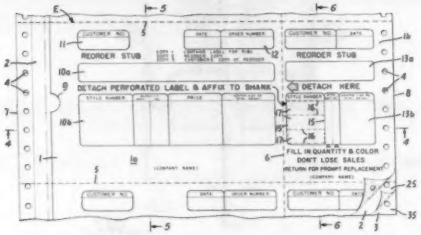


1. A twinski comprising: an integral mononose section and bifurcated tail sections separated by a longitudinal slot, the tail sections being at least five times as long as the integral nose section, the integral nose section including an upwardly curved forward tip region, the tail sections including a pair of central waist segments comprising a central waist portion, and a pair of terminal tail segments comprising a tail portion, said monoski having its greatest thickness at the central waist portion, and being reduced in thickness both towards the tail portion and the forward tip, the minimum thickness being adjacent to said forward tip region; ski bindings adapted to be mounted on each of said tail sections of said ski adjacent said central waist portion for holding the feet of a skier in side-by-side relation; and bridge means at the tail portion adjustably and floatingly holding the tail sections in predetermined spaced apart relation, so that the lateral spacings are predetermined but yet the tail sections are allowed to move vertically.

4,211,434
COMBINATION CONTAINER AND CONTROL FORM FOR SHIPPING, IDENTIFYING AND REORDERING MERCHANDISE

Jonathan Reese, 604 NE. 25th Ave., Hallandale, Fla. 33009

Continuation of Ser. No. 588,068, Mar. 13, 1975, abandoned, which is a division of Ser. No. 348,066, Apr. 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 207,249, Dec. 13, 1971, abandoned. This application Mar. 3, 1977, Ser. No. 774,120
Int. Cl.[2] B41L *1/26*
U.S. Cl. 282—11.5 A 14 Claims



1. A continuous manifold comprising three continuous bands of paper superposed on one another to form a three-ply structure, means defining feed holes in at least one of the plies adjacent each of the side edges of the manifold, longitudinally spaced transverse lines of perforations through all of said plies dividing said manifold into a succession of contiguous like rectangular units extending across said manifold, a line of perforations through all of said plies extending longitudinally of said manifold between the side edges thereof and positioned farther from a first side edge than from a second side edge, said longitudinally extending line of perforations dividing each of said rectangular units into a larger rectangular portion and a smaller rectangular portion, means bonding the first and second plies of the larger rectangular portion of each of said rectangular units together along said transverse and longitudinal lines of perforations to form a merchandise receiving container open at the edge disposed at said first side edge of the manifold and closed at the other three edges of the container, means on the first ply of said container forming portion identifying merchandise received in said container, the customer to whom said merchandise is to be shipped and an order number, perforations in the smaller rectangular portion of the first ply defining a plurality of severable identification labels for attachment to individual articles of merchandise received in said container, means on each of said labels for identifying said articles of merchandise, said larger rectangular portion of the second ply forming the back of said container, the smaller rectangular portion of the second ply and the underlying portion of the third ply constituting severable duplicate reorder stubs, means on each of said stubs indentifying the customer and the merchandise and providing space for filling in the quantity of the merchandise reordered, duplicating means between the smaller rectangular portions of the first, second and third plies for transferring information imprinted on said first ply to said second and third plies, said third ply being narrower than said second ply and having an edge spaced inwardly from said first side edge of the second ply, means bonding the second and third plies of each of said rectangular units together along said transverse lines of perforations and along a line extending longitudinally of said manifold between

the side edges thereof to define a pocket open at one end to receive a card for controlling the filling of the order for merchandise to be shipped in said container.

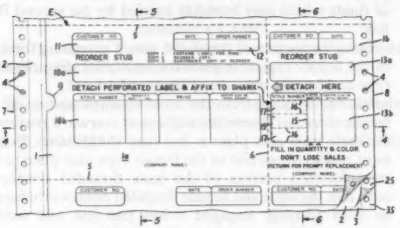
4,211,435
COMBINATION CONTAINER AND CONTROL FORM FOR SHIPPING, IDENTIFYING AND REORDERING MERCHANDISE

Jonathan Reese, Hallandale, Fla.

Continuation of Ser. No. 348,066, Apr. 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 207,249, Dec. 13, 1971, abandoned. This application May 26, 1976, Ser. No. 690,077

Int. Cl.[2] B41L *1/26*

U.S. Cl. 282—25 **16 Claims**



1. An assembly for stocking, shipping, recording and reordering merchandise, comprising first, second and third separate plies of sheet material, each of said plies comprising a separate individual sheet of material not integral with any other of said plies, coincident separation lines in said superposed separate plies dividing each of said plies into a first portion and a second portion, means adhesively joining marginal portions of said first portions of said first and second plies to form a container receiving said merchandise, means on said first portion of said first ply identifying the merchandise in the container, the customer to whom the merchandise is to be shipped and an order number, means for closing said container to retain the merchandise therein, means joining marginal portions of said first portions of said second and third plies to form a pocket external of said container and accessible when said container is closed, coincident means on said second portions of two of said separate plies identifying the merchandise in said container and the customer to whom the merchandise is to be shipped and providing coincident blanks for filling in the quantity of like merchandise to be reordered, duplicating means between said second portions of said plies for transferring information entered on one of said plies to the other, said second portions of said two plies constituting first and second reorder forms, whereby a customer can reorder like merchandise by filling in the desired quantity in said blank on said first reorder form, said quantity being thereby automatically duplicated in said coincident blank on said second reorder form, sending one of said reorder forms to the supplier and keeping the other of said reorder forms for his records.

4,211,436
PRESSURE-SENSITIVE RECORDING MATERIAL

Hans-Peter Kühlthau; Hubertus Psaar, and Roderich Raue, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 8, 1978, Ser. No. 958,609

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1977, 2750283

Int. Cl.[2] B41M *5/16, 5/22*

U.S. Cl. 282—27.5 **10 Claims**

1. Pressure-sensitive recording material, characterised in that it contains a substrate coated with an acidic color developer and a substrate coated with a colour-forming agent of the formula

wherein

R_1 denotes hydrogen or a non-ionic radical which is free from amino groups,

R_2 denotes hydroxyl, alkylamino, dialkylamino, acylamino, aralkylamino, arylamino, a saturated heterocyclic radical, alkoxy, alkenyloxy, aralkoxy, cycloalkoxy, aryloxy, acyloxy or a direct bond to R_4,

R_3 denotes hydroxyl, alkoxy, aralkoxy, alkenyloxy, cycloalkoxy, aryloxy, alkylthio, arylthio or a radical of the formula

R_5 and R_6 independently of one another denote hydrogen, alkyl, aralkyl, cycloalkyl or aryl or, together with the nitrogen atom, form a ring, or R_5 forms a ring with the ring B in the o-position relative to the nitrogen atom, and R_4 denotes an aryl radical which is free from amino groups or a heterocyclic radical, and further rings can be fused to the rings A, B and R_4 and the cyclic and acylic radicals and the rings A and B can contain non-ionic substituents, said color forming agent being dissolved or dispersed in a non-volatile organic solvent.

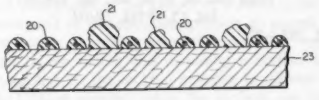
4,211,437
STILT CAPSULES FOR PRESSURE-SENSITIVE RECORD MATERIAL

Hugh K Myers, and Donald E. Hayford, both of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Filed Apr. 25, 1978, Ser. No. 899,847

Int. Cl.[2] B41M *5/16, 5/22*

U.S. Cl. 282—27.5 **19 Claims**

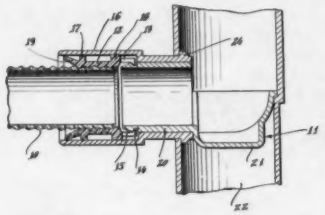


1. A pressure-sensitive record material which comprises a substrate, and a coating on at least one surface of the substrate comprising minute pressure-rupturable capsules containing a liquid solution of colorless chromogenic material and non-pressure-rupturable capsules containing a plurality of agglomerated kaolin particles, the kaolin-containing capsules being produced by coacervation of a water-soluble polymer and being present in an amount of at least 1/5 of the weight of the liquid-containing capsules, said kaolin-containing capsules having an average diameter of about 2 to 12 times greater than the liquid-containing capsules and being substantially uniformly sized and randomly interspersed in the coating with the liquid-containing capsules.

4,211,438
COUPLING ARRANGEMENT FOR TWO CO-AXIAL VACUUM CLEANER CONDUITS

Gustaf A. Asberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Apr. 11, 1978, Ser. No. 895,442
Claims priority, application Sweden, Apr. 18, 1977, 7704397
Int. Cl.[2] A47L 9/24
U.S. Cl. 285—7 8 Claims

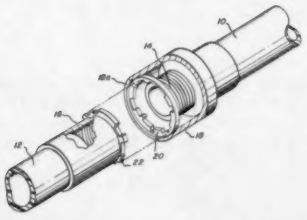


1. A connection between two coaxially arranged conduit portions of a vacuum cleaner in which one of said conduit portions is a coupling member to an air channel of said vacuum cleaner and having a projection part, and the other conduit portion is a hose comprising: an inner sleeve connecting part firmly secured to said hose and provided with means coacting with means on said coupling member for mounting said hose against axial movement and allowing rotatable movement relative to said coupling member, and an outer sealing sleeve surrounding said inner sleeve for obtaining an air tight connection between said hose and coupling member and to join said coupling member to said vacuum cleaner air channel, said inner sleeve having at least one projection on its outer peripheral surface thereof, which coacts with a portion of inner surface of said surrounding outer sleeve for sealing said inner sleeve within said outer sealing sleeve and for guiding said inner sleeve within said outer sealing sleeve when said hose and coupling are joined, and said outer sleeve having a portion thereof at one end which fits over and tightly engages the outer surface of said projecting part of the coupling member, and means on the free end of said portion of the outer sleeve for securing said outer sleeve to said air channel to thereby lock said coupling member to said vacuum cleaner air channel.

4,211,439
SAFETY DEVICE FOR HOSE CONNECTIONS

Jon P. Moldestad, 1015 Cadillac Way, #213, Burlingame, Calif. 94010

Filed Jul. 26, 1978, Ser. No. 928,097
Int. Cl.[2] F16L 19/02
U.S. Cl. 285—27 3 Claims



1. In a fluid handling system having first and second fluid lines for handling the fluids, the improvement comprising:

a male threaded connector connected to the first fluid line;

a female threaded connector connected to the second line;

a cup shaped shield means connected to and surrounding the male threaded connector and extending forward of a most forward end of the male threaded connector, the cup shaped shield means providing a shield against fluid sprayed from the male and female threaded connectors when they are joined together;

a female type cam plate carried within the cup shaped shield means forward of the male threaded connector, the female type cam plate having an open central portion and a plurality of keys spaced about its inner periphery surrounding the open portion in a first pattern indicating characteristics of fluids which may be safely carried by the first fluid line;

a male type cam plate connected to the female threaded connector proximate a most forward end of the female threaded connector, the male type cam plate having a plurality of keys circumferentially spaced about its outer periphery in a second pattern indicative of characteristics of fluids which may be safely carried by the second fluid line;

a locating lip portion of the shield means extending forward of the female type cam plate for axially locating the male type and female type cam plates; and

wherein the distance from the most forward portion of the female threaded connector and a most rearward portion of the male type cam plate is less than the distance from a most rearward portion of the female type cam plate to the most forward portion of the male threaded connector such that the male and female threaded connectors cannot be even partially engaged unless the first and second patterns match one another in the complementary manner sufficient to permit the male and female type cam plates to pass one another, thereby indicating compatibility of the first and second fluid lines.

4,211,440
COMPENSATED BLAST JOINT FOR OIL WELL PRODUCTION TUBING

Arthur E. Bergstrom, 5410 Bergstrom La., Houston, Tex. 77088

Continuation-in-part of Ser. No. 600,616, Jul. 31, 1975, Pat. No. 4,141,386. This application Jan. 3, 1977, Ser. No. 756,251
Int. Cl.[2] F16L 55/00
U.S. Cl. 285—45 6 Claims

1. A carbide-sheathed blast joint comprising a length of oil well tubing having threaded opposed ends,

a series of axially short carbide rings embracing said tubing between its ends, said carbide rings each having parallel opposed end surfaces which are continuously planar from their inner periphery to their outer periphery and are at right angles to the longitudinal axis of the tubing, the end

surfaces of said carbide rings being in contiguous relation, and,

a wave spring embracing said tubing at one end of said series of carbide rings,

a first clamping collar fixed about said tubing at one end thereof against which the other end of said series of carbide rings engages, and

a second clamping collar fixed about said tubing at the other end thereof which holds the wave spring in compression therebetween and the carbide rings to maintain the end surfaces of the carbide rings in close contiguous relation,

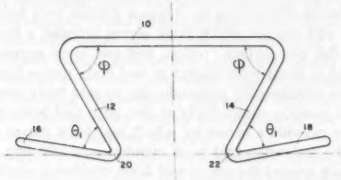
said wave spring being yieldable axially in response to endwise and angular motions of the carbide rings so as to accomodate stretching and flexing of the tubing at down hole positioning and temperature.

4,211,441

SPRING CLASP

Jakhin B. Popper, Kyriat Motzkin, Israel, assignor to Popper Engineering Ltd., Kyriat Motzkin, Israel

Filed May 31, 1978, Ser. No. 911,179
Claims priority, application Israel, Jun. 6, 1977, 52260
Int. Cl.[2] E05C *19/06*
U.S. Cl. 292—259 R **10 Claims**



1. An over-center fastening device for fastening a first member in a predetermined orientation with respect to a second member comprising:

an elongated element having a central region, constituting a handle, of a first length;

first and second intermediate regions arranged in a first plane having respective second and third lengths and being angularly disposed with respect to the central region; and

first and second end regions forming respective first and second vertices with the outer ends of the first and second intermediate regions and having respective fourth and fifth lengths disposed at an acute angle with respect to the axes joining the first and second vertices;

said device further comprising a pair of pivotal support means at least one of which is formed integrally with a second member for pivotally supporting said end regions at a predetermined height above a surface of said first member so as to permit pivotal displacement of said elongated element and so that said element exerts a force at said first and second vertices on said surface when in engagement therewith.

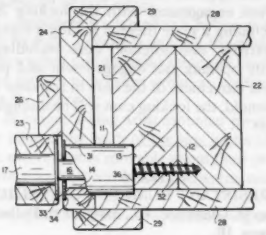
4,211,442

LOCK STRIKE

John D. Hansen, 2136 Grahn, Santa Rosa, Calif. 95404

Filed Jan. 8, 1979, Ser. No. 2,074
Int. Cl.[2] E05C *13/00*
U.S. Cl. 292—340 **5 Claims**

1. In a lock strike for use with a door mounted in a frame having a door jamb spaced from the structural member of a wall and a lock having a retractable bolt extending from one edge of the door: an elongated body extending through the jamb and into the structural member behind the jamb, said body having an axially facing shoulder toward the inner end thereof in abutting engagement with the structural member, a screw extending axially from the shoulder into the structural member to anchor the body to the structural member, and a socket formed in the body toward the outer end thereof in



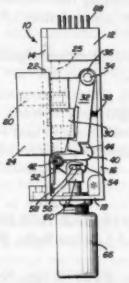
position to receive the lock bolt when said bolt is in an extended position.

4,211,443

ELECTRIC STRIKE

Lawrence D. Butts, and Raymond V. Kambic, both of Joliet, Ill., assignors to Folger Adam Co., Division of Telkee, Inc., Joliet, Ill., a part interest

Filed Jan. 17, 1978, Ser. No. 870,087
Int. Cl.[2] E05B *15/02*
U.S. Cl. 292—341.16 **7 Claims**



1. An electric strike comprising a casing, a keeper movably mounted with respect to said casing and including an abutment portion movable in a predetermined path, a locking member movably supported with respect to said casing and movable from a position in the path of movement of the abutment portion to block movement of the keeper to a position out of the path of movement of the abutment portion to permit movement of the keeper, a locking cam being pivotally supported with respect to the casing and including a surface thereon engaging a surface on the locking member to prevent movement of the locking member when the surfaces are engaged, electrically operated means operatively associated with said cam for moving the cam to a position with the surface thereon disengaged from the surface on the locking member to enable movement of the locking member to a position out of the path of movement of the abutment portion on the keeper, said surfaces on the locking cam and locking member being arcuately curved in an arc generally coinciding with the arcuate movement of the locking cam in a manner that force exerted on the locking member by force exerted on the keeper will move the surfaces on the locking member and locking cam towards more effective engagement rather than toward disengagement, said locking member being in the form of a pivotal lever having an arcuate surface formed on the swinging end thereof for engagement by the curved surface on the locking cam for reducing wear on the surfaces during relative movement therebetween, said electrically operated means including a solenoid

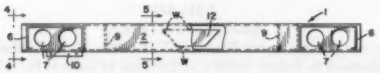
having an extendible and retractable core, said locking cam being spring biased in one pivotal direction whereby operation of the solenoid will overcome the spring bias to move the locking cam in the opposite direction, said locking cam being spring biased into engagement with the locking lever, said locking cam including a plate thereon having a transverse pin projecting therefrom, said solenoid core including a yoke having a laterally opening slot engaged wth said pin so that upon longitudinal movement of the core in response to energization of the solenoid, the locking cam will be disengaged from the locking lever.

4,211,444

IMPACT RESISTANT BUMPER FOR VEHICLES

John J. Glassmeyer, Glenwood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jun. 5, 1978, Ser. No. 912,684
Int. Cl.[2] B60R *19/04*
U.S. Cl. 293—150 **11 Claims**



1. An impact-resistant bumper adapted for mounting on the chassis of a motor vehicle, comprising:

a bumper beam having inner and outer generally vertical wall portions and upper and lower generally horizontal wall portions extending therebetween to form a generally closed box beam construction of generally rectangular cross-section,

longitudinally extending means rigidly affixed to said vertical wall portions,

said means including plates having stress-attenuating shapes of tapered configuration toward each end, each plate being rigidly affixed to one of said vertical wall portions at the longitudinal central portion thereof.

4,211,445

SOAP BAR HOLDER

Ivan D. Woods, 18119-3 Camino Bello, Rowland Heights, Calif. 91745

Filed Aug. 28, 1978, Ser. No. 937,595
Int. Cl.[2] A47G *35/00*
U.S. Cl. 294—25 **20 Claims**

1. A soap bar holder comprising:

a thin, flexible, elongated soap-holding pad;

a plurality of mutually spaced apart resilient suction cups on a first face of the soap-holding pad;

an elongated, laterally flexible, narrow stem having a first end secured to a second face of the soap-holding pad opposite the first face thereof; and

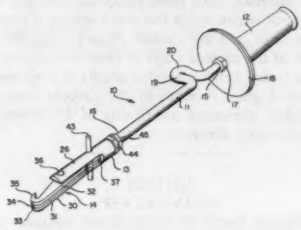
a stop pad secured to a second end of the stem opposite the first end thereof, the stem having sufficient lateral flexibility to move the soap-holding pad longitudinally and laterally relative to the stop pad.

4,211,446

SEAL PULLER

William E. Shultz, Sr., 442 W. St. Charles Rd., Villa Park, Ill. 60181

Filed Sep. 27, 1978, Ser. No. 946,352
Int. Cl.[2] B65G *7/12*
U.S. Cl. 294—26 **31 Claims**



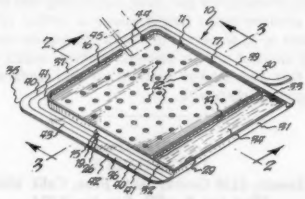
1. A tool for pulling and removing ring-shaped seals from an automobile transmission housing or the like comprising: an elongated body means having first and second ends, and a hook member pivotally mounted proximate said second end, said hook member including an elongate portion with hook means at one end thereof which hook means includes a broad relatively flat end surface portion, and said hook member being adapted to pivot with respect to said body means from a first position substantially perpendicular to said body means to a second position substantially in line with said body means to thereby provide a means by which said hook means may engage the seal when said hook member is in said first position and wrap around the seal as said hook member is pivoted from said first position to said second position, such that said broad relative flat end surface portion will engage said seal whereby upon the application of force to said body means as required in removing said seal, said force will be applied over a relatively large area, and the danger of rupturing said seal before removal is completed is lessened.

4,211,447

CAR FLOOR TRAY

Joseph DiVincenzo, 110 Burke Dr., Buffalo, N.Y. 14215

Filed Sep. 7, 1978, Ser. No. 940,322
Int. Cl.[2] B62D *25/20*
U.S. Cl. 296—1 F **14 Claims**



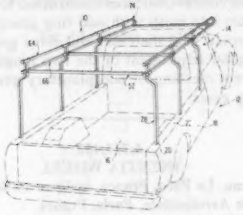
1. A car floor tray comprising a floor portion for receiving the footwear of a vehicle occupant, opening means in said floor portion for permitting liquid to pass downwardly through said floor portion, a tray portion including a bottom underlying said floor portion for receiving liquid which drains through said openings in said floor portion, a compartment in communication with said tray portion for receiving absorbent material for absorbing liquid from said tray portion, and selectively replaceable absorbent material in said compartment.

4,211,448

ADJUSTABLE RACK ASSEMBLY

Robert M. Weston, P.O. Box 812, Bayou La Batre, Ala. 36509

Filed Oct. 26, 1977, Ser. No. 846,226
Int. Cl.[2] B60D *3/00*
U.S. Cl. 296—3 **2 Claims**



1. An adjustable rack assembly for use with a truck having truck panel sides and a cab, the panel sides having a series of sockets therein, said sockets being arranged in laterally aligned pairs, the rack assembly comprising:

a plurality of vertical posts, each having a base end section, and removable upper end section, the base end sections being engaged in said sockets in transversely aligned pairs;

the removable upper end sections each including a pair of vertically spaced, substantially horizontal top and bottom sleeves on each of said removable upper end sections, said sleeves being longitudinally aligned on each side of the truck, and including leading end sleeves on the pair of vertical posts adjacent said cab;

an inwardly projecting horizontal stub shaft fixedly secured to said removable upper end sections in substantially right angular relation to said sleeves;

transverse rail members slidably engaged with said stub shafts of said removable upper end sections between said transverse pairs;

releasable screw connection means, including blocks fixedly secured to the rail members and sleeves, securing the rail members and stub shafts together;

elongated longitudinally extending bar members slidably engaged in an extending through the aligned horizontal sleeves and having open leading ends projecting forwardly of the leading end sleeves;

an overcab rack assembly comprising a pair of U-form brackets with upper and lower bracket arms, a leading bight section, and trailing reduce shafts;

said reduce shafts being telescopically engaged in said open leading ends of said longitudinally extending bar members;

an inwardly extending foot member on the lower bracket arm of each of said brackets; and

a forward cross bar spanning said brackets over the cab and engaged with said foot member.

4,211,449

CONVERTIBLE AND COLLAPSIBLE BENCH/TABLE COMBINATION

Larry D. Richardson, 5755 Wade Rd., and Annette M. Sobolewski, 5695 S. Wade Rd., both of Coleman, Mich. 48618

Filed May 26, 1978, Ser. No. 909,636
Int. Cl.[2] A47B *85/04*
U.S. Cl. 297—126 **10 Claims**

1. As an article of convertible and collapsible furniture, which is a bench/table combination comprising:

a bench seat section having front, rear and side edges and under support legs depending therefrom;

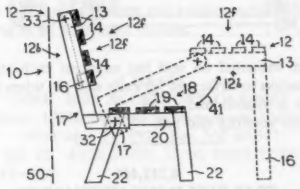
a changeable surface component with horizontal, opposed longitudinal edges, one of which depending on assembled position of the said article is an inward or upward pivotally secured edge with the other being an arcuately movable edge and

also on said component side edges connecting said longitudinal edges with front and back surfaces on said component between all of said edges

which component is adapted to function as a bench seat back with its front surface facing the front edge of said bench section when upright and a table and the like top with said front surface uppermost when at least substantially horizontally disposed;

a pair of hinged swing arms mounted pivotally towards the rear edge along each of the side edges of said bench section and rotatably movable about their pivot mountings in a direction frontwards and rearwards with respect to said bench section;

said changeable surface component being hingedly mounted



along each of its side edges towards its inward or upward, depending on positioning, longitudinal edge to and at pivot ponts on the upper extremities of both of said swing arms so that its arcuately-movable longitudinal edge is freely movable through an upwardly and downwardly directed arcuate movement about the center line of said pivot points; and

a pair of foldable legs mounted respectively along the arcuately-movable longitudinal edge and towards the side edges on the back side of said changeable surface component, said legs being adapted to lie flatly in retracted storage against the back side of said component when it is disposed upright as a seat back and to be unfolded downwardly outwardly from the back side of said component to provide leading edge table leg support for said component when it is swung out to substantially horizontal disposition as a table and the like top.

4,211,450

RELEASE MECHANISM FOR ROWS OF COLLAPSIBLE SEATS

David L. Sutter, Kennebunkport, Me., assignor to Hussey Manufacturing Company, Inc., North Berwick, Me.

Filed Apr. 5, 1979, Ser. No. 27,465
Int. Cl.[2] A47C *1/12*
U.S. Cl. 297—232 **3 Claims**

1. Apparatus for supporting a plurality of adjoining seats in an upright position on a base and for releasing them to pivot into a collapsed position, comprising:

side stanchions for said seats,

means for adjoining said seats to form an extended row;

means for pivoting said stanchions to said base comprising:

a link pivoted to each stanchion and to said base,

a guide plate mounted on said base,

a slot in said guide plate,

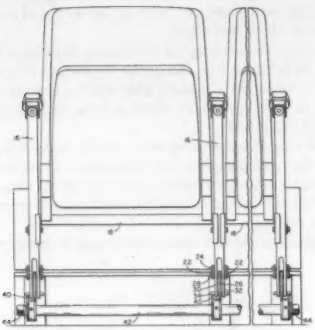
a pin on the lower end of each stanchion below said link and sliding in said slot, and

said link, slot, and pin arranged to guide the pivotal motion of said stanchions from an upright position to a collapsed position parallel to said base;

means for releasing said stanchions from the upright position comprising:

a torsion bar, journalled to said base running parallel to

said seats in the vicinity of the lower ends of said stanchions;



a cam mounted on said bar adjacent each stanchion in position to strike and lift each said pin when the torsion bar is rotated, and

means for rotating said bar.

4,211,451

SEAT RECLINING MECHANISM

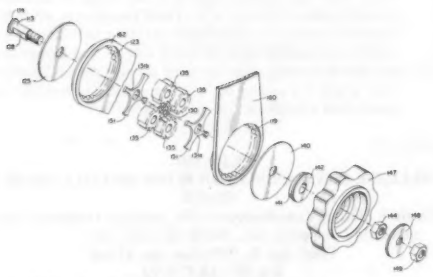
Philip C. Shephard, Coventry, England, assignor to I. H. W. Engineering Limited, Warwick, United Kingdom

Continuation-in-part of Ser. No. 781,103, Mar. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 653,659, Jan. 30, 1976, abandoned. This application Sep. 8, 1978, Ser. No. 940,965

Claims priority, application United Kingdom, Feb. 7, 1975, 05235/75

Int. Cl.[2] A47C *1/025*

U.S. Cl. 297—362 **15 Claims**



1. A seat reclining mechanism comprising:

first and second hinge plates for mounting on a seat and a backrest respectively, said first and second hinge plates in rotatable contact with each other;

a pair of internally toothed ring gears spaced axially apart from each other, one of said internally toothed ring gears being carried on one of the hinge plates and the other being carried on the other of the hinge plates, one of said internally toothed ring gears having more teeth than the other ring gear;

a shaft extending through said pair of ring gears;

a drive gear being in the space within said pair of ring gears, said drive gear being mounted on said shaft;

a plurality of planetary gears in mesh with both of said ring gears and said drive gear;

a pair of carrier members each having a central aperture complementary to said shaft so that said shaft can rotate within each of said carrier members, said carrier members each having a plurality of partially circular, equiangularly spaced openings thereby providing a plurality of radially extending arms with substantially concave surfaces extending between neighboring arms, each of said carrier members being at an opposite side of said drive gear with each of said planetary gears snugly received between neighboring arms and in contact with said concave surface, said concave surfaces constructed to urge said planetary gears into mesh with said ring gears; and

means to rotate said shaft and said drive gear to effect relative angular adjustment of the two hinge plates through concurrent meshing of said planetary gears with both of said ring gears.

4,211,452

INERTIA WHEEL

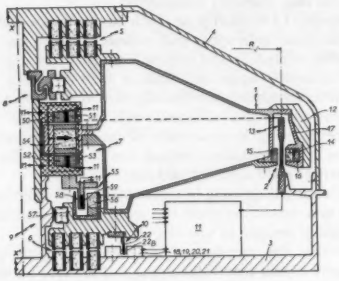
Pierre Poubeau, Le Pecq, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 14, 1978, Ser. No. 886,496

Claims priority, application France, Mar. 15, 1977, 77 07685

Int. Cl.[2] F16C *39/00*

U.S. Cl. 308—10 **7 Claims**



1. An inertia wheel comprising

a flywheel having an adaptable rim of variable mass;

a motor for peripherally driving said flywheel including

a rotor fast with said flywheel and formed on said rim with a magnetic field of flux from said rotor formed across an air gap within which is a ring of an even number n of permanent magnets p of radial magnetization with alternating polarities, having a peripheral magnet width P_p and a magnet pitch Pm linked by the relationship $Pm=3P_p/2$, and

a stator including a winding having sets of coils interconnected in pairs of ascending and descending turns of width $P_p/2$ with the number of coils being three times the even number n of permanent magnets p divided by two and thereby the expression of number of coils equals 3np/2,

said rotor located relative to said stator to place said winding of said stator where the radial magnetic field of flux of said rotor crosses the active turns of width $P_p/2$ of said winding of said stator,

switching means connected to said stator for switching the current on said sets of coils of said stator winding causing rotation of said rotor;

a control means associated with said switching means for detecting the angular position of said rotor and said flywheel;

magnetic bearings of the radially passive and axially active type mounted on said flywheel and said rotor and suspending said rotor on said flywheel; and

an axial rate detector means for detecting the axial rate of said rotor connected to said stator relative to said rotor and an actuator connected between said rotor and said stator and associated with said detector means, each having redundant coils.

4,211,453

ROCK DRILL BIT LUBRICATION SYSTEM

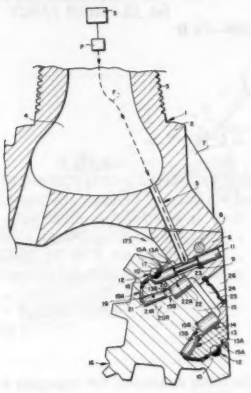
Carl E. Johansson, Le Lavandou, France, assignor to SKF Industrial Trading and Development Co. B.V., Nieuwegein, Netherlands

Continuation of Ser. No. 786,804, Apr. 12, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,273

Claims priority, application Netherlands, Apr. 12, 1976, 7603835

Int. Cl.[2] F16C *19/49*

U.S. Cl. 308—8.2 13 Claims



1. In a drill bit including a body part, a first chamber in said body part for containing a fluid lubricant under pressure higher than atmospheric during operation of the drill bit, at least one bit segment extending from said body part, a generally conical cutting element mounted on said bit segment and freely rotatable thereon thus forming a cutting element assembly, the improvement in combination therewith, wherein: said bit segment includes an annular part having inner and outer circumferential bearing surfaces, said conical cutting element has corresponding bearing surfaces adjacent those of said annular part thereby forming two pairs of bearing surfaces defining first and second raceways, the second raceway being radially outward of the first raceway, said second raceway further includes a plurality of ball bearing elements distributed therein, this second raceway and ball bearing elements forming a locking bearing for retaining said conical cutting element coupled to said annular part of said bit segment, said cutting element assembly further comprising a plurality of rolling bearing elements distributed in said second raceway forming an inner bearing, and lubrication means for lubricating said raceways and bearing elements therein.

4,211,454

ANTIFRICTION BEARING SUPPORT

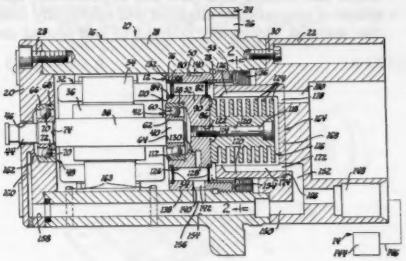
William A. Mitchell, and John S. Clark, both of Springfield, Vt., assignors to Bryant Grinder Corporation, Springfield, Vt.

Filed Oct. 16, 1978, Ser. No. 952,028

Int. Cl.[2] F16C *27/08*

U.S. Cl. 308—26 18 Claims

1. An antifriction bearing support comprising: an outer support member for mounting the support on a spindle housing; an inner support member for mounting an antifriction bearing which is adapted to rotatably support a spindle; at least one diaphragm that extends between the inner and outer support members in order to radially fix the inner support member and the antifriction bearing mounted thereby; said diaphragm being flexible to allow preloading of the antifriction bearing axially with respect to the axis of spindle rotation such that the preloading permits high speed spindle rotation; and adjustable means for mounting the outer support member on the spindle



housing to flex the diaphragm and axially preload the antifriction bearing in an adjustable manner.

4,211,455

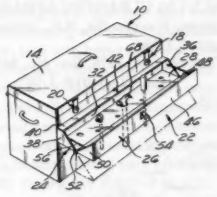
TOOL BOX ACCESSORY CABINET

Joe E. Tedrow, 15900 Osborne St., Sepulveda, Calif. 91343

Filed May 21, 1979, Ser. No. 40,547

Int. Cl.[2] A47B *81/00, 53/00;* E05B *73/00*

U.S. Cl. 312—198 5 Claims



1. In combination with a tool box, having a vertical sidewall a cabinet secured to said vertical sidewall, said cabinet comprising:

sidewalls connected to an elongated horizontal planar base having a leading edge and a trailing edge, a back attached at said trailing edge, said back being in contact with said vertical sidewall of said tool box, said base being in contact with said tool box, said base having a plurality of spaced-apart openings, each of said openings to connect with an elongated handle of a tool having an enlarged head with the enlarged head to be located against said base; and

a top hingedly connected to said base at said leading edge, said top being movable between a closed position and an open position, said top having a front wall and a top wall, whereby with said top in said closed position, removal of a tool from a said opening is prevented while with said top in said open position the tools are capable of being removed.

4,211,456

MAGNETIC ELECTRICAL CONNECTORS

Hartley M. Sears, Costa Mesa, Calif., assignor to Schick Laboratories, Inc., Los Angeles, Calif.

Filed Jan. 31, 1979, Ser. No. 8,060

Int. Cl.[2] H01R *11/30*

U.S. Cl. 339—12 R 6 Claims

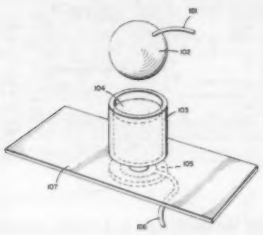
1. A device for electrically coupling a first and second portion of an electrical circuit, comprising:

a cylindrical housing, having a axial end and a cylinderical cavity in said axial end, said housing being electrically

conductive and electrically coupled to said first circuit portion;

a magnet of size to fit within said cavity a spaced distance below said housing axial face, and so positioned; and

a sphere of magnetically attracted and electrically conductive material, electrically coupled to said second circuit



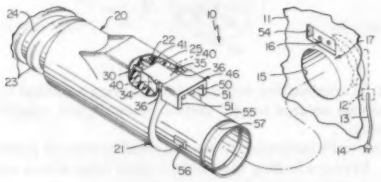
portion, with diameter greater than the diameter of said cavity, and, when positioned to contact said housing axial face around the lip of said cavity, magnetically retained against said lip by said magnet, thereby forming an electrical coupling between said first and second circuit portions.

4,211,457

VACUUM CLEANING APPARATUS

Roger D. Meadows, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Sep. 14, 1978, Ser. No. 942,235
Int. Cl.[2] H01R *3/04*
U.S. Cl. 339—15 **12 Claims**



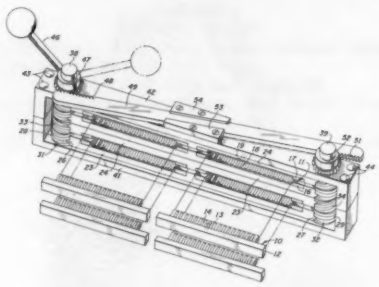
1. In a current-carrying vacuum hose having a polymeric hose connector defining at least one end thereof and a female electrical connector embedded in said hose connector; said hose connector having a cavity therein and at least one shoulder defining a wall portion of said cavity; said shoulder being disposed transverse the longitudinal axis of said hose connector; said female electrical connector having a pair of tubular members embedded in said hose connector which serves as a matrix therefor; the improvement comprising an electrical connector assembly which comprises, a support structure having a cooperating shoulder provided thereon which is adapted to be urged in locking engagement against said one shoulder, said shoulders defining locking means for locking said electrical connector assembly to said hose connector, a first male electrical connector having a pair of pins each received in an associated tubular member of said female electrical connector, and a second male electrical connector extending outwardly of said support structure which is adapted to be operatively associated with another female electrical connector, said assembly comprising a shield fixed to said support structure for shielding said second male electrical connector, said shield having an axial length measured substantially parallel to said longitudinal axis which is at least equal to the axial length of said second male electrical connector, said shield also having a roughly U-shaped cross section at each axial position thereof along its axial length, said shield and support structure being made of an electrically insulating polymeric material as a single piece, said electrical connector assembly with its shield, support structure, and first and second male elecrical connectors being a single unit which is locked to said hose connector by said locking means.

4,211,458

ZERO INSERTION FORCE CONNECTOR

William C. Kent, Garland, Tex., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 2, 1979, Ser. No. 35,175
Int. Cl.[3] H01R *13/629*
U.S. Cl. 339—74 R **6 Claims**



1. A zero force connector for engaging a multi-tiered bank of plugs each having pairs of opposed terminal contact elements mounted thereon, which comprises:

a plurality of pairs of associated spaced bar-like connector halves, each having a series of contact elements arrayed in a tier facing a tier of the contact elements on the other connector half; and

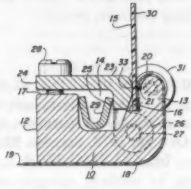
means for simultaneously moving each connector half of each pair of connector halves toward and away from the associated connector half of each pair to engage and disengage the connector contact elements with the terminal contact elements on each tier of a bank of plugs positioned between the connector halves.

4,211,459

CIRCUIT BOARD INTERCONNECTION APPARATUS

James J. Madden, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 26, 1979, Ser. No. 14,877
Int. Cl.[2] H01R *13/54*
U.S. Cl. 339—75 MP **10 Claims**



1. Interconnection apparatus comprising a flat, flexible cable **(18)** having a plurality of conductors, a circuit board **(15)** having a plurality of terminals **(30)** corresponding to said plurality of conductors, and a base **(10)** for supporting said cable and said board and for aligning and connecting said conductors and said terminals characterized in that said base **(10)** is provided with a slot **(14)** to present a first and a second flange **(13, 12)** having opposing faces, and in that a clamping means is

provided for clamping the end of said cable between a circuit board (15) and one face of said first flange (13), said clamping means comprising an inverted, substantially "L" shaped force bar (23) pivotally mounted (26, 27) at each end of said base, one leg (25) of said bar having a knee (33) opposite said one face of said first flange (13), spring means (29) operating between the face of said second flange (12) and said one leg (25) of said force bar (23) for urging said knee (33) against said circuit board (15), and means (28) for adjusting the travel of the other leg (24) of said force bar (23) for controlling the force of said knee (33) on said circuit board (15).

4,211,460

ADAPTER FOR CONNECTING A LOAD TO A BUS BAR

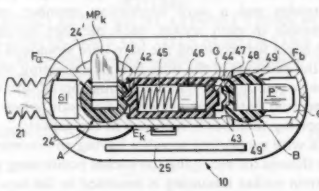
Heinz Seelbach, Kierspe, and Gerhard Eversberg, Lüdenscheid, both of Fed. Rep. of Germany, assignors to Erco Leuchten GmbH, Lüdenscheid, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,648

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810681

Int. Cl.[2] H01R *13/54*

U.S. Cl. 339—75 M **10 Claims**



1. An adapter for connecting a two-wire load circuit across two supply conductors accessible through a longitudinal channel of a bus bar of generally U-shaped profile, comprising:

a housing with an insertion part receivable in said channel;

a first and a second shaft juxtaposed in said housing having parallel axes and extremities in said insertion part respectively provided with first and second contact blades substantially perpendicular to said axes, each of said shafts having a disengagement position facilitating introduction of said insertion part into said channel and an engagement position angularly offset from said disengagement position, said blades being withdrawn into said housing in said disengagement position and projecting therefrom for contact with a respective supply conductor in said engagement position;

first and second operating means respectively connected with said first and second shafts for individually rotating same between said disengagement and engagement positions thereof;

detent means on said first shaft projecting from said housing in said engagement position thereof for coaction with retaining elements of said bus bar to prevent untimely withdrawal of said insertion part from said channel; and

locking means in said housing having first and second holding formations positioned to mate with respective coupling formations on said first and second shafts for enabling rotation of said second shaft into its engagement position only in the engagement position of said first shaft and enabling rotation of said first shaft into its disengagement position only in the disengagement position of said second shaft.

4,211,461

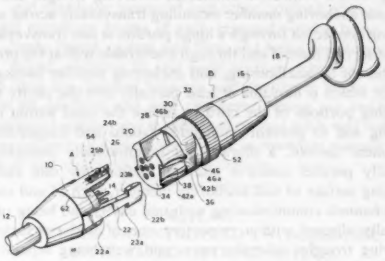
AXIALLY MATING CABLE CONNECTOR

Ronald O. Wescott, Edison, N.J., assignor to Industrial Electronic Hardware Corp., New York, N.Y.

Filed Nov. 27, 1978, Ser. No. 963,927

Int. Cl.[3] H01R *13/62;* **F16L** *19/00*

U.S. Cl. 339—91 R **9 Claims**



1. An axially mating cable connector comprising first and second parts carrying interengageable contact members, means for locking said parts to prevent disengagement of said contact members, and means for releasing said locking means, said locking means comprising a flexible locking arm mounted on and axially extending from said first part and having a lobe thereon, an axially extending recess and a shoulder on a surface of said second part, said arm being adapted to be at least partially received within said recess with said lobe engaging said shoulder to lock said parts, said releasing means comprising an actuating member and a circumferential groove on the exterior surface of said second part into which said actuating member is at least partially received, said actuating member being rotatable about the axis of said second part to engage said arm and move same radially outwardly relative to said surface of said second part to disengage said lobe from said shoulder, means for biasing said actuating member towards a position wherein said member does not operatively engage said arm, said biasing means comprising a torsion spring operably connected between said second part and said actuator member.

4,211,462

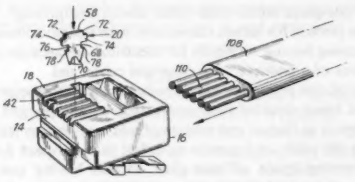
ELECTRICAL CONNECTOR FOR TERMINATION CORDS WITH IMPROVED LOCKING MEANS

Maurice Wolfthal, Ossining, N.Y., assignor to Stewart Stamping Corporation, a division of Insilco Corp., Yonkers, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,559

Int. Cl.[2] H01R *13/58*

U.S. Cl. 339—103 M **5 Claims**



1. An electrical connector housing for terminating a cord adapted to receive a plurality of insulated conductors enclosed within a jacketed cord and for making electrical contact external to the conductors, comprising: a unipartite dielectric housing having a forward free end and a rearward cord input end having an aperture formed therein opening into a cord-receiv-

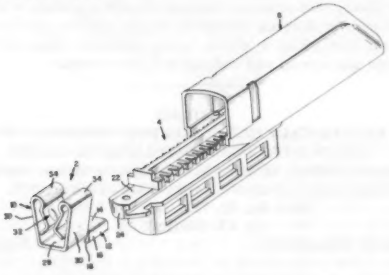
ing cavity formed within the housing, said cord-receiving cavity having a forward conductor-receiving portion and a rearward jacket-receiving portion; a plurality of parallely extending conductor-receiving troughs extending in a longitudinal direction in said forward conductor-receiving portion of said cavity; a plurality of openings adapted to receive terminal members, each of said openings being aligned and communicating with a respective conductor-receiving trough; and at least one anchoring member extending transversely across said housing connected through a hinge portion at one transversely extending end thereof and through a severable web at the other end thereof to said housing, said anchoring member having a surface which is movable at least partially into the cavity for engaging portions of the cord to secure the cord within the housing and to prevent unintended lateral and longitudinal movement thereof, a plurality of longitudinally extending, mutually parallel concave channels defined by said cord-engaging surface of said anchoring member, each of said concave channels communicating with said cavity and being substantially aligned with a respective one of said conductor-receiving troughs, whereby upon said web being separated from the housing and said anchoring member being pivotally moved into said cavity, said cord-engaging surface engages said cord in a manner such that each of said concave channels applies a locking pressure along a peripherally extending portion of a respective one of said insulated conductors.

4,211,463

METAL STRAIN RELIEF CLAMP

Curtis S. Chandler, Walkertown, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 12, 1979, Ser. No. 11,338
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—103 M **2 Claims**



1. A one-piece metal strain relief clamp, comprising:

a base portion for secure connection with a plastic connector housing having terminals for electrical connection to the wires of a multiple wire electrical cable, and

a pair of arm portions each extending from said base portion and being doubled back upon itself by an enlarged loop portion so that an end portion of said arm portion is opposite the other end portion to define therebetween a cable receiving space of hour-glass section having one end closed by said base portion and an opposite open end closed off by convergence of said loop portions upon deflection of said arm portions toward each other,

said end portions being between the remainder of said arm portions separating said cable receiving space from said remainder of said arm portions, and

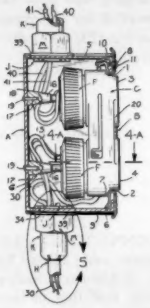
said loop portions being engageable with each other to prevent excessive closure against said cable.

4,211,464

ELECTRIC OUTLET BOX CONTAINING TWIN ELECTRIC SOCKETS

Hop Lee, 2455 - 24th Ave., San Francisco, Calif. 94116

Filed Apr. 23, 1979, Ser. No. 32,545
Int. Cl.[2] H01R *9/16*
U.S. Cl. 339—122 R **2 Claims**



1. An electric outlet box comprising:

(a) a box having a bottom wall with pins extending into the box for positioning a twin socket mounting received in the box;

(b) each socket in the mounting supporting a plurality of electrodes and a wire supporting member removably receivable in each socket, each member having a base with bores for receiving the bare wire strands of the wires and the portions of the wire strands extending beyond the bores contacting the base and being forced into electrical connection with their associate electrode when the wire supporting member is received in the socket;

(c) each wire supporting member having an extension with a bore therein for receiving the socket positioning pin when the twin socket mounting is mounted in the box; and

(d) a cover for closing the box, said cover pressing against said twin socket mounting for forcing the extensions of the wire supporting members against the box bottom wall for positioning and anchoring the mounting in the box, the bases of said members being forced into positions for clamping the bare wire strands to their associate electrodes for forming an electrical connection therewith.

4,211,465

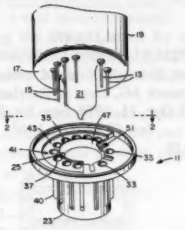
MEANS FOR CONTROLLING DIELECTRIC FLOW IN AN ELECTRON TUBE BASE

Peter G. Puhak, Seneca Falls; John D. Bilynsky, Auburn, and Fred L. Sorensen, Waterloo, all of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 23, 1979, Ser. No. 23,352
Int. Cl.[3] H01R *13/46*
U.S. Cl. 339—144 T **8 Claims**

1. In an electron tube base employing a dielectric material therein contiguous to the closure portion of the tube wherefrom a sealed exhaust tubulation and a plurality of surrounding connective leads extend in parallel relationship, said base having an axial hollow thimble-like crown formed of a substantially cylindrical wall evidencing open and opposed terminal ends and an annular flange extending outwardly in a manner normal to said crown at said open end thereof, said crown defining an internal cavity dimensioned to spatially encompass said tubulation, the terminal end of said crown having an aperture therethrough to provide means for introducing said dielectric material into said cavity, said flange being traversed by an array of apertures to accommodate the positioning of said leads therethrough, said flange having an interfacial surface adjacent said tube closure portion, said interfacial surface

having a floor wherefrom a raised annular seating ledge is formed to extend at least partially circumferentially thereabout in the region beyond said aperture array to provide seating means for said closure portion, said interfacial surface being further configurated in a manner comprising: barrier means formed adjacent certain designated lead-receiving aperture positions to prevent the flow of said dielectric material



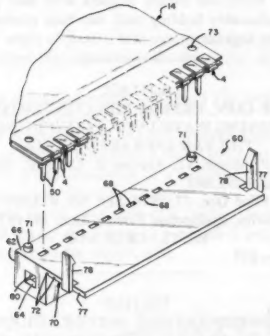
from said cavity to the vicinity of said certain designated aperture positions; and in the region devoid of said barrier at least one channel means formed in the floor of said interfacial surface adjacent other designated lead-receiving aperture positions to facilitate the flow of said dielectric material from said cavity to the vicinity of said other designated aperture positions.

4,211,466

CRIMPED ELECTRICAL CONNECTIONS FOR CONDUCTORS ON THIN SUBSTRATES

Charles E. Reynolds, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 21, 1978, Ser. No. 962,736
Int. Cl.[2] H01R *13/54;* H05R *1/12*
U.S. Cl. 339—176 MF **11 Claims**



1. The combination of first and second insulating films having conductors thereon and electrical connecting devices crimped onto said films, said films having parallel spaced-apart edges, said conductors extending to said edges, said conductors on said first film being laterally offset from said conductors on said second film, said electrical connecting devices being characterized in that:

each of said connecting devices comprises two crimped portions, each of said crimped portions comprising opposed cantilever beams connected to each other by an arcuate bight portion, said two crimped portions being in side-by-side relationship and being connected to each other at the outer ends of the cantilever beams of the two crimped portions which are adjacent to each other,

said first film being between said cantilever beams of one of said crimped portions of each of said crimped connecting devices with said edge of said first film adjacent to said bight portion and with one of said conductors of said first film against one of said cantilever beams of said one crimped portion, said second film being between said cantilever beams of the other one of said crimped portions of each of said crimped connecting devices with said edge of said second film adjacent to said bight portion and with one of said conductors of said second film against one of said cantilever beams of said other crimped portion,

said cantilever beams of each crimped portion being resiliently flexed against said films and being maintained in a flexed condition by said bight portions whereby,

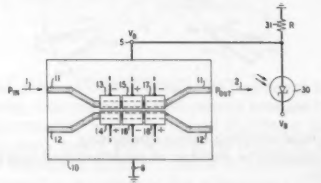
said films are clamped between said cantilever beams of said crimped portions and said cantilever beams are resiliently maintained against, and in electrical contact with, said conductors and each of said conductors is in electrical contact with one of said electrical connecting devices.

4,211,467

OPTICALLY-CONTROLLED TWO-CHANNEL INTEGRATED OPTICAL SWITCH

Peter S. Cross, Middletown, and Ronald V. Schmidt, Matawan, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 13, 1978, Ser. No. 869,364
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.14 **8 Claims**



1. An optical switch comprising a pair of waveguides having mutually parallel portions in sufficient proximity for $\Delta\beta$-switched directional coupling therebetween, and control means comprising at least two sets of electrode elements disposed about adjacent sections of said parallel portions of said waveguides, said control means having an input connected to said at least two sets of electrode elements in a way such that a voltage connected to said input results in opposite electric fields in said adjacent sections of said waveguides, characterized in that said optical switch further includes means for detecting optical energy at an output port of one of said waveguides to develop a control voltage, and means for coupling said control voltage to the input of said control means, whereby optical power present at an input port of one of said waveguides is coupled primarily through to an output port of one of said waveguides, the particular one being dependent on the previous optical powers present at said input port.

4,211,468

METHOD AND APPARATUS TO PROVIDE A SECURE OPTICAL COMMUNICATION SYSTEM

Peter D. Steensma, Midland Park, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

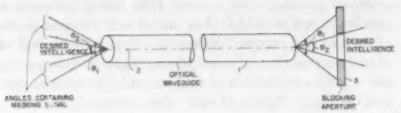
Filed Oct. 31, 1975, Ser. No. 627,584
Int. Cl.[2] G02B *5/14;* H04B *9/00*
U.S. Cl. 350—96.10 **15 Claims**

1. A method for rendering intelligence in an optical communication system secure comprising the steps of:

launching an intelligence modulated optical beam into one end of an optical waveguide at a small angle with respect to the axis of said waveguide;

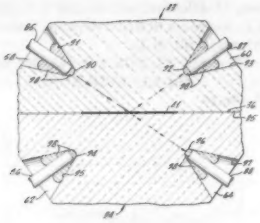
launching a masking signal modulated optical beam into said

one end of said waveguide at a high angle with respect to the axis of said waveguide; and



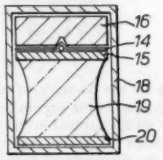
recovering only said intelligence modulated optical beam at the other end of said waveguide.

4,211,469
OPTICAL COUPLING DEVICE
Melvyn A. Holzman, Boulder, Colo., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.
Filed Sep. 5, 1978, Ser. No. 939,275
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.16 **13 Claims**



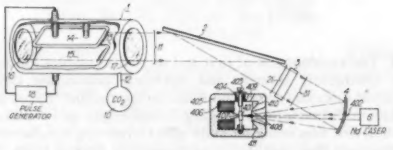
8. An optical coupling device comprising
a light-transmissive member of predetermined index of refraction,
said light-transmissive member having first, second, third, and fourth lens cavities therein,
each of said lens cavities including a tapered entrance wall and a smoothly rounded unpointed inner end wall of predetermined contour formed by a surface of revolution, whereby said lens cavities are adapted to receive light-emitting and light-receiving means,
said first and said second lens cavities being opposite from each other with their axes in alignment,
said third and said fourth lens cavities being opposite from each other with their axes in alignment,
a partial mirror positioned between said first and said second lens cavities and between said third and said fourth lens cavities,
an extension of the axes of said first and said second cavities, and an extension of said axes of said third and said fourth cavities intersecting at said partial mirror,
said partial mirror being planar and at equal angles to said axes of said first, second, third, and fourth lens cavities,
said axes of said first, second, third, and fourth lens cavities falling in a single plane which is perpendicular to the plane of said partial mirror,
whereby light emitted by a light-emitting means in one of said lens cavities is transmitted through said light-transmissive member and to said partial mirror with a portion of said light being transmitted through said partial mirror to the one of said lens cavities opposite therefrom, and another portion of said light being reflected by said partial mirror and transmitted to another of said lens cavities, while the fourth of said lens cavities receives none of said light,
light-emitting and light-receiving means in at least some of said cavities, said light-emitting and light-receiving means including
a cylindrical optical fiber having a substantially flat end face perpendicular to the axis thereof received in at least one of said cavities, with the edge of said fiber between said end face and the cylindrical surface thereof engaging said tapered entrance wall so as to align said optical fiber with the axis and lens cavity receiving the same, and an optical material of predetermined index of refraction entirely filling the space between said end face and said inner end wall of said cavity receiving said optical fiber.

4,211,470
OPTICAL FIBRE CONNECTOR
William J. Stewart, Fritwell, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland
Filed Oct. 11, 1978, Ser. No. 950,445
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.21 **10 Claims**



1. An optical fibre connector comprising two base portions, two layers of metallic foil, each respective layer of metallic foil being secured to a respective one of said base portions to entrap a respective optical fibre between said respective layer of metallic foil and said respective one of said base portions, a plate member having a groove formed longitudinally in a surface thereof, said two base portions being adapted to engage said surface of said plate member and to abut each other, each said respective layer of metallic foil being arranged between its respective base portion and said plate member and being deformed around its respective optical fibre within said groove so that said fibres are axially aligned with said groove, and means for releasably holding said two base portions and said plate member together.

4,211,471
MODE CONVERTERS FOR CONVERTING A NON-CONFINING WAVE INTO A CONFINING WAVE IN THE FAR INFRARED RANGE
Georges R. P. Marie', 17, Avenue R. Croland, Fontenay-aux-Roses, France (92260)
Filed Dec. 27, 1978, Ser. No. 973,600
Claims priority, application France, Dec. 28, 1977, 77 39448
Int. Cl.[2] G02B 5/00
U.S. Cl. 350—147 **4 Claims**



1. A laser device emitting a confining wave beam in the far infrared range for confining charged particles originating from a target impacted by said beam, said laser device comprising:
a laser producing a beam of a linear polarized wave having a non-confining mode for charged particles;
a polarization conversion device converting the linear polarization of the laser wave beam into a circular polarization wave beam, said converting device including a parallel sided plate of dielectric material having a metal coated

face forming a mirror, said plate receiving the linear polarized laser wave beam at an incidence near the Brewster incidence and with its polarization direction at 45° with respect of the incidence plane, the thickness and index of refraction of the plate material being selected so that the component of the incident beam polarized perpendicular to said incidence plane is, at the outlet of said parallel sided plate, in phase quadrature with the component polarized parallel to said incidence plane;

a device receiving the beam output by said polarization conversion device for converting the circular polarized, non-confining wave beam into a circular polarized, confining wave beam;

means for producing a magnetic field coaxial with said circular polarized, confining wave beam; and

means for concentrating said circular polarized, confining wave beam on to said target.

4,211,472

WIDE ANGLE OBJECTIVE LENS SYSTEM

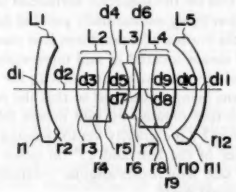
Akiyoshi Nakamura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Sakai, Japan

Filed Nov. 7, 1978, Ser. No. 958,427

Claims priority, application Japan, Nov. 16, 1977, 52-138101

Int. Cl.² G02B *11/30*

U.S. Cl. 350—216 **7 Claims**



1. A wide angle objective lens system of five-group, seven-elements comprising, consecutively from the object to the image side:

a first lens group consisting of a negative meniscus single lens convex to the object side;

a second lens group consisting of a positive doublet having a cemented surface concave to the object side;

a third lens group consisting of a negative meniscus single lens concave to the object side;

a fourth lens group consisting of a positive doublet; and

a fifth lens group consisting of a negative meniscus single lens concave to the object side.

4,211,473

LIQUID CRYSTAL DISPLAY DEVICES

Ian A. Shanks, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 12, 1979, Ser. No. 29,412

Claims priority, application United Kingdom, Apr. 12, 1978, 14425/78

Int. Cl.² G02F *1/13*; C09K *3/34*

U.S. Cl. 350—337 **10 Claims**

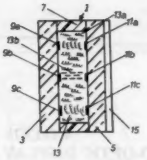
1. A liquid crystal display device comprising:

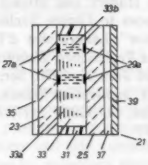
a liquid crystal cell including front and rear insulating substrates arranged in parallel, each with an inwardly facing surface bearing an electrode structure, and contained between the substrates, a layer of liquid crystal material, the cell being arranged so that the device is capable of being divided into dark and bright optical state regions upon application of an appropriate electric field across the layer when a potential difference is applied between the electrode structures;

a reflector arranged for reflecting light incident upon the cell and propagated therethrough;

pleochroic means, including at least one pleochroic material;

fluorescent means, including at least one fluorescent material, the fluorescent means having an optical absorbtion band lying approximately within the optical transmission





band of the pleochroic means, the fluorescent means also having a corresponding fluorescence emission band lying approximately within the optical absorbtion band of the pleochroic means; and wherein, the pleochroic means and the fluorescent means are capable of co-operating and are arranged to co-operate so that when light is incident upon the cell and an appropriate electrical field is applied across the layer, light propagated to an observer from any bright state region of the device is of approximately neutral tint.

4,211,474

ULTRA-RAPID ELECTRO-OPTICAL SHUTTER

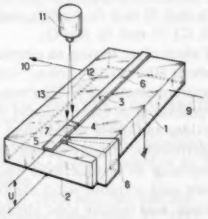
Denis Le Goff, St Cyr L'Ecole, France, assignor to Compagnie Generale d'Electricite, Paris, France

Filed Jan. 24, 1978, Ser. No. 871,883

Claims priority, application France, Jan. 31, 1977, 77 02577

Int. Cl.² G02F *1/03*

U.S. Cl. 350—356 **5 Claims**



1. An electro-optical shutter comprising an electro-optical crystal plate capable of transmitting through its thickness an incident light beam when an electric field is applied to opposed first and second plate faces, said shutter comprising:

a first electrode disposed on said first plate face, said first electrode comprising an elongated strip, disposed on said first plate face, said strip being separated into two aligned parts and forming a gap therebetween,

a second electrode opposed to said first electrode and disposed on said second plate face,

a first joint made of a material capable of being rendered conductive to electrons under the influence of light and disposed between said two parts, and within said gap, and

means for applying a voltage between one of the parts of said first electrode and said second electrode to thereby create said electric field.

4,211,475

ELECTRO-OPTIC DISPLAY DEVICE USING A VITREOUS SOLID ION-CONDUCTIVE MATERIAL

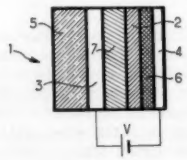
Jean-Pierre Malugani; Alain Wasniewski; Michel Doreau; Guy Robert; Odile Hubert, and Michel Massin, all of Besancon, France, assignors to Centre Technique de l'Industrie Horiogere "Ceterhor" Laboratoire d'Electrochimie-Faculte des Sciences et des Techniques, Besancon, France

Filed Jun. 22, 1978, Ser. No. 918,103

Claims priority, application France, Jun. 29, 1977, 77 19989

Int. Cl.[2] G02F *1/17, 1/19, 1/23*

U.S. Cl. 350—357 **11 Claims**



1. An electro-optic display device comprising: a silver ion conductive vitreous solid electrolyte; a transparent electrode in contact with one face of said solid electrolyte; a silver metal electrode in contact with another face of said solid electrolyte; a transparent substrate supporting said transparent electrode; and means for applying an electrical potential between said transparent electrode and said silver metal electrode, said solid electroylyte being a member selected from the group consisting of the binary systems:

40 to 57.5 mol % AgI-60 to 42.5 mol % AgPO;

16 to 19.5 mol % PbI_2-84 to 80.5 mol % $AgPO_3$;

25 mol % NaI-75 mol % $AgPO_3$; and

25 mol % KI-75 mol % $AgPO_3$,

said solid electrolyte having an electical conductivity at 25° C. of about 10^{-2} to 10^{-3} $ohm^{-1}cm^{-1}$;

said transparent electrode being a member selected from the group consisting of electronically conductive doped metallic oxides and noble metal films.

3. An electro-optic display device as claimed in claim 1, further comprising an opaque solid electrolyte layer intercalated between said vitreous solid electrolyte and said silver metal electrode, said opaque solid electrolyte being a member selected from the group consisting of the binary systems:

19.5 mole % PbI_2-80.5 mole % $AgPO_3$;

25 mole % NaI-75 mole % $AgPO_3$; and

25 mole % KI-75 mole % $AgPO_3$.

5. A display device as claimed in claim 1, further comprising an electrochromic layer intercolated between said transparent electrode and said solid electrolyte, said electrochromic layer being a transition metal oxide capable of forming an insertion compound with silver ions.

4,211,476

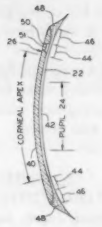
CONTACT LENSES WITH ANGULAR ORIENTATION AND STABILIZATION

Allan J. Brummel, 44W121 Empire Rd., St. Charles, Ill. 60174; Neil R. Hodur, Chicago, Ill., and Richard Synkoski, Paxton, Mass., assignors to Allan J. Brummel, Chicago, Ill.

Filed Dec. 29, 1978, Ser. No. 974,232

Int. Cl.[2] G02C *7/04*

U.S. Cl. 351—160 R **6 Claims**



1. A rotationally stabilized contact lens having a posterior surface comprising a prescription zone and an intermediate curved, lens support region between said prescription zone and the edge of said lens on the posterior surface of said lens, said intermediate region being substantially parallel to an adjacent toric surface on the cornea when said lens is in place on the eye of a patient, and means located in said intermediate region of said lens for forming a control meniscus with the tear layer of the eye, said means being positioned so that the resultant vector of the fluid forces created by said means falls within an arcuate area defined by the gravity vector passing through the geometrical center of the lens and 15° on either side of said vector, whereby said lens resists angular rotational about the cornea during normal wear.

4,211,477

LIGHT EXPOSING PRISM SYSTEM FOR USE IN FORMING PHOSPHOR PLANE OF COLOR PICTURE TUBE

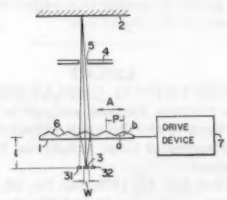
Takehiko Ueyama; Masahiro Nishizawa, both of Mobara; Yoshiyuki Odaka, Isumimachi, and Hiromi Matsuda, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 7, 1978, Ser. No. 931,542

Claims priority, application Japan, May 26, 1978, 53-62335

Int. Cl.[2] G03B *41/00*

U.S. Cl. 354—1 **4 Claims**



1. A light exposing prism system for use in a light exposure process for forming a phosphor plane of a color picture tube, said prism system being arranged between a panel of said color picture tube and a linear exposing light source and including a plurality of small prisms arranged in a plane substantially perpendicular to an axial line extending through a center of said panel and a center of said light source, each of said small prisms having a longitudinal axis substantially parallel with an axis of said linear light source and two sloped surfaces elongated in parallel with said longitudinal axis and inclined in a direction

perpendicular to said longitudinal axis and parallel with said perpendicular plane, said sloped surfaces having the same inclination with opposite directions with respect to said perpendicular plane, said small prisms being arranged at a pitch of between 0.05 mm and 3.0 mm in said direction perpendicular to said longitudinal axis.

4,211,478

CIRCUIT FOR INDICATING THE CONDITION OF THE BATTERY IN A PHOTOGRAPHIC CAMERA

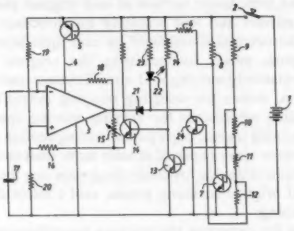
Theodor Huber, Munich; Kurt Borowski, Aschheim, and Gerhard Egger, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Apr. 19, 1978, Ser. No. 898,314

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717191

Int. Cl.[2] G03B *17/18*

U.S. Cl. 354—60 L **13 Claims**



1. In a still or motion-picture photographic camera having a battery, a battery-monitoring circuit operative for monitoring the condition of the battery and indicating battery condition to the user, the circuit comprising an indicator element; a controllable-conductivity semiconductor element connected to the battery and to the indicator element and operative when conductive for carrying energizing current for the indicator element to cause the indicator element to generate a indication having a first character; an astable multivibrator also connected to the battery and to the indicator element and operative when switched on for causing the indicator element to be energized to generate an indication having a different second character; and means connected to the battery, the semiconductor element and the astable multivibrator operative for maintaining the semiconductor element conductive when the battery voltage is in a first range and operative for preventing and permitting oscillation of the astable multivibrator when the battery voltage is outside or in a second range, respectively, the astable multivibrator comprising an operational amplifier having inverting and non-inverting inputs, and RC-stage connected to the inverting input and a reference voltage divider connected to the battery and having a tap connected to the non-inverting input, said means including a semiconductor switch having a main-electrode path connected to the astable multivibrator to prevent and permit oscillation of the multivibrator in dependence upon the conduction state of the semiconductor switch and a voltage divider connected to the camera battery and having a tap connected to the control electrode of the semiconductor switch.

11. In a still or motion-picture photographic camera having a battery, a battery-monitoring circuit operative for monitoring the condition of the battery and indicating battery condition to the user, the circuit comprising an indicator element, and means operative when the battery voltage is in a high range for effecting simple steady illumination of the indicator element, when the battery voltage is in a lower range effecting a pulsating illumination of the indicator element with a frequency which progressively increases as the battery voltage progressively declines, and ceasing to illuminate the indicator element at all when the battery voltage has declined to a predetermined value.

4,211,479

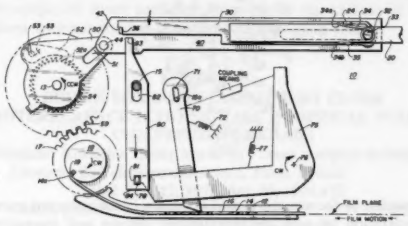
FILM ADVANCE MECHANISM

Arthur Zawodny, Budd Lake, N.J., assignor to Keystone Camera Corporation, Clifton, N.J.

Filed Mar. 23, 1978, Ser. No. 889,240

Int. Cl.[2] G03B *1/08*

U.S. Cl. 354—213 **15 Claims**



1. In a photographic camera, particularly in a still camera for use with (1) photographic roll film to be advanced along a film plane and having a row of perforations, one for each film frame, and (2) metering means movable between a retracted position and an extended position, said retracted position on one side of an exposure plane and said extended position traversing said exposure plane by extending through one of the film perforations to detect its presence, a film advance mechanism comprising:

(a) reciprocating drive means comprising at least two adjacent and substantially collinear members, said first member movable with respect to said second member from an enabled position to a disabled position, said enabled position causing said second member to move in unison with said first member and said disabled position allowing said first member to reciprocate independently of said second member;

(b) drive disabling means movable from a rest position to an extended position, said extended position causing movement of said first member of said reciprocating drive means to said disabled position in response to the movement of said metering means to its extended position, whereby said film advance mechanism is disabled allowing said first member to reciprocate independently of said second member; and

(c) drive reenabling means to move said drive disabling means to a rest position and allow said first member of said reciprocating drive means to move to said enabled position, whereby said film advance mechanism is enabled causing said second member to move in unison with said first member.

4,211,480

ELECTROMAGNETIC SHUTTER CONTROLLING DEVICE FOR CAMERA

Kiyoshi Kitai; Masaru Kobayashi; Tomoo Yonemoto, and Shogo Kato, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Sep. 21, 1978, Ser. No. 944,245

Claims priority, application Japan, Sep. 27, 1977, 52/115891

Int. Cl.[2] G03B *9/62, 9/64, 9/66*

U.S. Cl. 354—234 **4 Claims**

1. An electromagnetic shutter controlling device for a camera for releasing the shutter to start exposure of a shutter aperture when said device is energized and completing exposure when said device is deenergized comprising: at least one shutter blade for opening and closing the shutter aperture, a first driving spring for driving said shutter blade to close the

aperture, an electric delay circuit for controlling the exposure time, an electromagnetic device including an armature attracted by the magnetic force produced by energization of the electromagnetic device and being connected to said electric delay circuit, a second driving spring connected so as to be strained during the course of attraction of said armature so as to drive said shutter blade to open the aperture, and a retaining member for keeping the shutter blade at the aperture closing position until it is actuated to release the shutter blade by the

attraction of the armature, said armature being attracted upon energization of said electromagnetic device and operative during the course of attraction for charging said second driving spring and then releasing said shutter blade by releasing said retaining member, said armature being returned when said electromagnetic device is deenergized, said first driving spring driving said shutter blade to close the aperture while returning said armature to the original position when said electromagnetic device is deenergized.

4,211,481

TANK FOR DEVELOPING COLOR FILMS

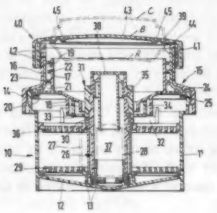
Rainer Bernhardt, Bergneustadt, Fed. Rep. of Germany, assignor to Johannes Bockemuehl, Gummersbach, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 946,450

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743791

Int. Cl.[2] G03D *13/04*

U.S. Cl. 354—312 **13 Claims**



1. In a tank for developing film, a combination comprising a housing having an interior; a first cover on said housing and having passage means communicating with said interior for respectively introducing a developing liquid into and withdrawing the same from said interior; a second cover normally mounted on and closing said passage means of the first cover so as to prevent leakage of the developing liquid from the interior of said housing, said second cover being removable from said first cover to open said passage means for entry and exit of the developing liquid; and means for preventing the entry of light through said passage means into said interior of the housing upon removal of said second cover from said first cover, said second cover including a first circumferential portion operative to firmly embrace the wall of said first cover defining an opening communicating with said passage means and a second portion closing said opening, said second portion of the said cover being adapted to be bulged relative to said first portion when said cover is in assembly with said housing and subject to an internal pressure thus varying the interior volume of said housing.

4,211,482

ELECTROPHOTOGRAPHIC COPYING APPARATUS EQUIPPED WITH SCANNING SYSTEM CONTROL DEVICE

Kenichi Arai, Nakano; Kenji Shibazaki, Aichi; Tsuneo Kitagawa, Toyohashi; Tomoji Murata, Toyokawa, and Kenzo Nagata, Okazaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 20, 1979, Ser. No. 22,363

Claims priority, application Japan, Apr. 5, 1978, 53-40735

Int. Cl.[2] G03G *15/28*

U.S. Cl. 355—8 **6 Claims**

1. An electrophotographic copying apparatus which comprises an original platform of transparent plate material, an optical system having a light source for illuminating an original to be copied from under surface of said original platform and reflecting mirrors and lens assembly for directing light-wise image of the original illuminated by said light source onto a photoreceptor, means for scanning the original including means for relatively moving said optical system and said original platform, means for selecting copying magnifications at least including mechanism for varying moving speed of said original scanning means, copy paper loading section capable of loading thereon copy paper of at least more than two different sizes, and control device for controlling scanning movement at least of said original scanning means, said control device further comprising:

(a) means for detecting the copying magnification selected by said copying magnification selecting means;

(b) means for detecting size of the copy paper loaded on said copy paper loading section;

(c) means for setting time required for said scanning means to move over area available for the copying at the moving speed to be determined by said copying magnification, so as to correspond to the area available for the copying on said original platform to be determined by the detected magnification and copy paper size;

(d) means for starting the scanning movement of said scanning means at predetermined speed to be determined by said copying magnification;

(e) means for measuring time started to function following starting of the scanning of said scanning means,

(f) means for comparing the time measured by said time measuring means with the time preliminarily set by said time setting means, and

(g) means for emitting signal to stop the scanning movement of said scanning means when said measured time becomes equal to said set time as a result of the comparison by said comparing means.

4,211,483

COPY PRODUCTION MACHINES HAVING JOB SEPARATION AND COLLATION CAPABILITIES

Noreen A. Hannigan, Farmington Hills, Mich., and Terence Travis, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,726

Int. Cl.[2] G03G *15/00*

U.S. Cl. 355—14 R **11 Claims**

1. A copy production machine having a copy producing portion, plural output portions for receiving produced copies from said copy production portion, and an image input section for supplying images to said copy producing portion for use in producing copies of said supplied images on copy sheets, one of said output portions having a given number of copy receiving bins (capacity) having different images carried thereby, for receiving said produced copies, means indicating an end of a copy producing run, means storing copy sheets, said copy

producing portion having copy producing and standby modes, and capable of switching between said modes;

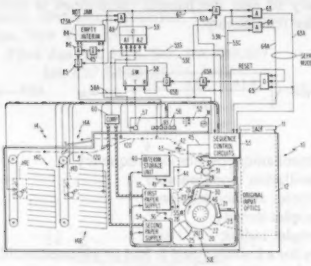
the improvement including in combination:

a control means having,

a copy select register for indicating a first number of copies to be produced, said first number capable of indicating a number of copies greater than said given capacity,

a copy count register for indicating the total number of copies of one image produced in a given copy production job; said copy production job being one or more copy producing runs of each image to be reproduced as said copies,

separation initiating means indicating completion of a job segment, said job segment including one or more of said copy producing runs,



separation sheet transporting means responsive to said separation initiating means to activate said copy production portion to transfer from said means for storing copy sheets as job segment separation sheets intermediate any two successive copy runs of a given copy producing job to said one output portion in accordance with a number of copies of each said image to be produced in a next successive given one of said job segments, and

accumulating means operative in response to said separation indicating means indicating a job segment for accumulating a count from all prior job segments and supplying same to said copy count register whereby said total number of copies indicated is for all job segments produced.

4,211,484

DRUM CLEANING BLADE FOR IMAGE TRANSFER TYPE ELECTROPHOTOGRAPHIC COPYING MACHINE

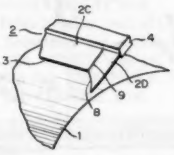
Fumio Iwai; Masakazu Kokiso; Junichi Koiso, and Tamio Ogino, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1978, Ser. No. 965,025

Claims priority, application Japan, Dec. 8, 1977, 52-146639

Int. Cl.[2] G03G *21/00*

U.S. Cl. 355—15 **2 Claims**



1. A drum cleaning blade for an electrophotographic copying machine which has a rotatable drum having a photo-sensitive cylindrical surface in which an electrostatic latent image of an original to be copied is produced and developed by a toner, comprising a sheet-like major portion having a straight lower edge, a pair of generally coplanar projections extending forwardly at both sides of said major portion and having respective slanted inner edges facing inwardly in opposition to each other, the inner edges being continuous to and inclined laterally outwardly relative to the straight lower edge of the major portion so that the projections are tapered forwardly, and cuts formed in said major portion each starting from a junction between the straight lower edge and each of the slanted inner edges, whereby the straight lower edge and the slanted inner edges formed in the projections together are adapted to bear on the cylindrical surface of the drum thereby to scrape off toner particles deposited on the surface of the drum which is rotated relative to said cleaning blade.

4,211,485

DEVICE FOR SUPPRESSING VERY CLOSE INTERFERENCE ECHO SIGNALS IN OPTICAL PULSE COMPRESSION RADARS

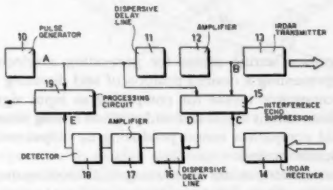
Wladimir Koreicho, Chilly Mazarin, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Jun. 12, 1978, Ser. No. 914,412

Claims priority, application France, Jun. 16, 1977, 77 18556

Int. Cl.[2] G01C *3/08*; G01S *7/28*

U.S. Cl. 356—5 **3 Claims**



1. An optical pulse compression radar device, comprising a circuit for generating electrical signals of determined duration and with a frequency variable as a function of time, called chirps, an optical transmitter comprising a continuous transmission source modulated by the chirps, a receiver for deriving chirps from the light signals received and a processing circuit for the chirps supplied by the receiver, first mixer means having a first input connected to said receiver and a second input operable to be connected to said chirp generation circuit, said first mixer means delivering a signal of a frequency equal to the difference of the frequencies of the signals applied to its inputs, a filter connected to the output of said first mixer means, second mixer means having a first input connected to said filter and a second input operable to be connected to said chirp generation circuit, the output signal of said second mixer means having a frequency equal to the difference of the frequencies of the signals applied at its inputs, said output signal being fed to said processing circuit, an oscillator, switch means for connecting said second inputs of said first and second mixer means either to said chirp generation circuit or to said oscillator, and timer means for controlling said switch means thereby to connect said mixer means to said chirp generation circuit during the generation of a chirp by said circuit.

4,211,486

SPECTROPHOTOMETER

Haakon T. Magnussen, Jr., Pinole, and Roy P. Moeller, Hayward, both of Calif., assignors to Altex Scientific, Inc., Berkeley, Calif.

Filed Mar. 20, 1978, Ser. No. 888,229

Int. Cl.[2] G01J *3/06, 3/42*

U.S. Cl. 356—328 **25 Claims**

1. A spectrophotometer comprising:

a. a multiple wavelength electromagnetic wave source;

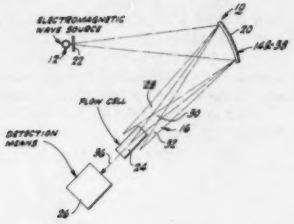
b. means for intercepting waves from said source and dis-

persing said waves into a spectrum of said electromagnetic waves;

c. means for detecting a selected portion of said spectrum of said electromagnetic waves;

d. means for directing a selected portion of the spectrum of said electromagnetic waves to said detecting means;

e. closed loop servo positioning means for moving said directing means and selected portions of the spectrum of said electromagnetic waves simultaneously to said detecting means, said closed loop servo positioning means including sensor means for discerning the position of said directing means and transforming said position of said directing means into a signal;



f. position setting means for generating a selected signal representing a desired position of said directing means;

g. comparitor means for comparing as input signals, said sensor means signal and said position setting means signal, said comparitor means producing an output error signal therefrom; and

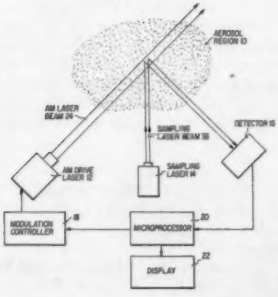
h. servo motor means for moving said directing means comprising means for transforming said error signal into a movement inducing signal, means for transmitting said movement inducing signal, and means for imparting movement to said directing means in accordance with said transmitted movement inducing signal.

4,211,487

METHOD AND APPARATUS FOR DETERMINING AEROSOL SIZE DISTRIBUTIONS

Clyde A. Morrison, Wheaton; Nick Karayianis, and Donald E. Wortman, both of Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 22, 1979, Ser. No. 4,979
Int. Cl.[2] G01N *15/02*
U.S. Cl. 356—336 **4 Claims**



1. An apparatus for determining the size distribution of aerosol droplets in an aerosol region, comprising:

drive means for generating an undirectional electric field and directing said field toward said aerosol region such that said field penetrates said aerosol region;

means for amplitude modulating said electric field such that said field is defined by the following relationship,

$$E(t) = E_0 \cos\omega t[1 = \epsilon_M \cos\omega_M t]$$

where

E_0=peak amplitude

ω=carrier frequency

ϵ_M=modulation depth

ω_M=modulating frequency;

t=time

whereby the modulation of said electric field produces resonant elongations and contractions in the form of mechanical oscillations of selectively sized droplets, where the oscillating frequency of said mechanical oscillations is defined by the following relationship,

$$\omega_n = \sqrt{\frac{n(n-1)(n+2)\tau}{\rho a^3}} = \omega_M$$

where

ω_n=mechanical oscillation frequency

n=oscillation mode number

τ=droplet surface tension

ρ=droplet density

a=droplet radius;

whereby for a known τ and ρ, and an assumed oscillation mode n, only those droplets having a radius a oscillate at a preselected oscillation frequency ω_n;

sampling means for directing a light beam against the mechanically oscillating aerosol droplets, said sampling means arranged such that said light beam is scattered by said aerosol region with the scattered light beam exhibiting a time varying intensity produced as a result of reflection of said light beam off a time varying droplet reflection surface of each of said oscillating droplets;

detector means in the path of the scattered light beam for measuring the time varying intensity of said scattered light;

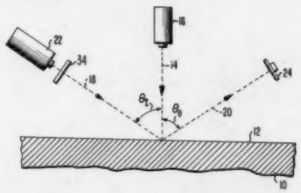
data processing means coupled to said amplitude modulating means and said detector means for sequentially selecting the oscillation frequencies ω_M and for determining an aerosol size distribution based on the intensity of the time varying portion of the scattered light beam at each oscillating frequency ω_n as measured by said detecting means.

4,211,488

OPTICAL TESTING OF A SEMICONDUCTOR

Hans P. Kleinknecht, Bergdietikon, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Oct. 3, 1978, Ser. No. 948,107
Int. Cl.[2] G01N *21/32*
U.S. Cl. 356—369 **10 Claims**



1. A method of optically testing electrical parameters of a surface of a semiconductor including carrier mobility and recombination time comprising the steps of:

irradiating said surface with a first beam of monochromatic light having a wavelength less than the wavelength corre-

sponding to the band-gap energy of said semiconductor, whereby the energy of said light beam is substantially absorbed by said surface resulting in the excitation of electrons and holes at said surface,

simultaneously irradiating said surface with a second beam of monochromatic light having a wavelength larger than the wavelength corresponding to the band-gap energy of said semiconductor, whereby part of said second beam is reflected from said surface,

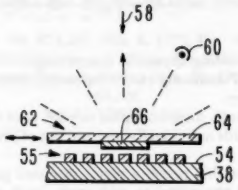
measuring the intensity of said reflected beam, whereby the magnitude thereof is a measure of the carrier mobility and recombination time at said semiconductor surface.

4,211,489

PHOTOMASK ALIGNMENT SYSTEM

Hans P. Kleinknecht, Bergdietikon, Switzerland, and Wolfram A. Bösenberg, Monmouth Junction, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 16, 1978, Ser. No. 869,637
Int. Cl.² G01B *11/26, 9/02*
U.S. Cl. 356—400 **23 Claims**



1. An automatic apparatus for aligning a photomask with a substrate comprising:

(a) a substrate having a diffraction pattern formed thereon;

(b) a monochromatic light source adapted to have a beam directed onto said diffraction pattern;

(c) a completely opaque key on the photomask, said completely opaque key being adapted to block portions of said diffraction pattern from the beam of said monochromatic light source;

(d) at least two photosensitive elements adapted to receive light from said monochromatic light source after it has been reflected from said diffraction pattern;

(e) mounting means for mounting said substrate and said photomask such that the photomask and substrate can be moved relative to one another; and

(f) a feedback mechanism including said photosensitive elements and said mounting means for aligning said photomask to said substrate by relative movement between said photomask and said substrate in response to the intensities of light detected by said photosensitive elements.

4,211,490

DRUM MIX ASPHALT PLANT WITH FIBER FILTER DUST COLLECTOR

James D. Brock, and Erbie G. Mize, both of Chattanooga, Tenn., assignors to Astec, Industries, Inc., Chattanooga, Tenn.

Continuation of Ser. No. 685,087, May 10, 1976, abandoned. This application Jan. 22, 1979, Ser. No. 5,339
Int. Cl.² B28C *5/06*
U.S. Cl. 366—11 **12 Claims**

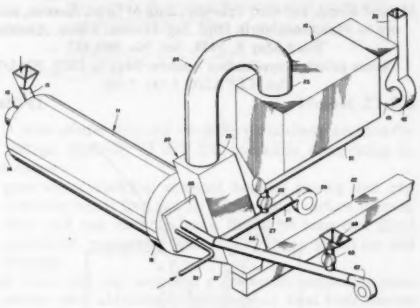
4. Drum asphalt plant with reduced airborne emission, comprising in combination:

means providing a heated combined drying and mixing drum which is operative to receive and agitate a quantity of aggregate material, so as to produce airborne particulate material within the drum;

means for supplying liquid asphalt material to said drying and mixing drum so as to apply said asphalt material to the aggregate material within said drum, whereby hydrocarbon smoke particles are formed in the drum as a consequence of exposing the asphalt material to the heat within the drum,

exhaust means in communication with said drying and mixing drum and operative to withdraw air including the airborne particulate matter and hydrocarbon smoke particles from said drum;

air filtering means connected to receive said withdrawn air and having at least one porous fiber filter medium through which the withdrawn air is passed, so as to form on said filter member a dust cake of said particulate matter which absorbs said hydrocarbon smoke particles;



means operative to remove said dust cake from said filter medium; and

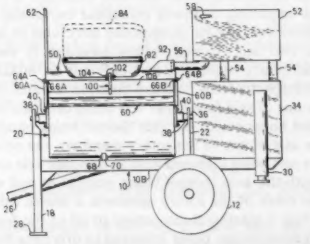
means operative to receive said removed dust cake, which comprises separated nonairborne particulate matter and absorbed hydrocarbon smoke particles, and to return said dust cake to said drying and mixing drum by mixing the dust cake with said liquid asphalt material that is supplied to said drum, so that the dust cake forms part of the mixture of aggregate and asphalt material within the drum without again becoming airborne.

4,211,491

COVERED MIXING MACHINE, OR THE LIKE, AND METHOD OF LOADING THE SAME

Robert F. Chaney, and Gene N. Connell, both of San Francisco, Calif., assignors to Quad C Corporation, San Francisco, Calif.

Filed Nov. 13, 1978, Ser. No. 959,692
Int. Cl.² B28C *5/06*
U.S. Cl. 366—30 **19 Claims**



16. A cover for a mixer, or the like, to prevent dust particles of material dumped into the mixer from escaping through a material loading opening in the mixer into the surrounding atmosphere while material is being dumped from a sack into the mixer through the material loading opening, said cover comprising,

a cover member of solid material attached to the mixer for closing the material loading opening therein,

an aperture formed in said cover member through which dry material to be mixed may be dumped from a sack into the mixer, and

a funnel-shaped member at said aperture into which a sack to be emptied fits in substantially sealing engagement therewith for plugging said aperture by the sack and preventing escape of particles of material into the surrounding atmosphere through said aperture.

4,211,492

DOUGH PORTIONING MACHINE

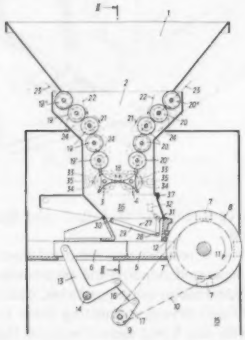
Helmut König, and Karl Schnider, both of Graz, Austria, assignors to Maschinenfabrik Dipl. Ing. Helmut König, Austria

Filed May 5, 1978, Ser. No. 903,133

Claims priority, application Austria, May 6, 1977, 3264/77

Int. Cl.[2] A21C *5/00, 7/00*

U.S. Cl. 366—76 **13 Claims**



1. A dough portioning machine, comprising a machine frame, a drum rotatably mounted in said frame, a dough supply station having a hopper to supply the dough to a chamber forming a dough reservoir, pocket openings arranged on the circumference of said drum to receive the dough from said chamber, a plunger means guided in said chamber and serving for feeding the dough into said pocket openings, a first drive means for imparting a stepwise rotating movement to said drum, a second drive means for imparting a reciprocating movement to said plunger, a preportioning means arranged within said hopper and having two rotary members rotatably mounted on horizontally disposed axes, each of said rotary members having arms on its circumference for cutting off the dough and for feeding same into said chamber, a third drive means for imparting a unison rotational movement with the same angular velocity but in opposite directions to said rotary members, two sets of feed rollers arranged in said hopper above said rotary members, and defining an intake gap between the respective sets, said gap tapering towards said rotary members, one of said feed roller sets being disposed near a side wall of said hopper with the axes thereof being parallel to and above the axis of one of the rotary members, the other of said feed roller sets being disposed near an opposite side wall of said hopper with the axes thereof being parallel to and above the axis of the other of the rotary members, a fourth drive means for imparting a rotational movement to all of the feed rollers, the fourth drive means being arranged to drive the feed rollers of the one set in the opposite direction to the feed rollers of the other set, the direction of rotation of each set of feed rollers being the same as that of the rotary member arranged below the respective set, a dough sensing means responsive to the quantity of dough in said dough reservoir and connection means between said sensing means and said third and fourth drive means for operating said third and fourth drive means responsive to signals received from said sensing means to control the quantity of dough in said dough reservoir.

4,211,493

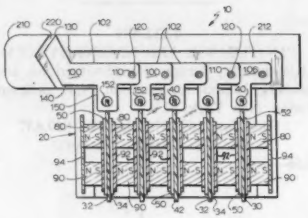
IMPACT PRINTING APPARATUS

Matthew J. Costello, and Norman K. Gallagher, both of Bethel, Conn., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 30, 1978, Ser. No. 937,932

Int. Cl.[2] B41J *3/12*

U.S. Cl. 400—121 **8 Claims**



1. Impact printing apparatus comprising

a plurality of insulating cards disposed parallel to each other in an array,

electromagnetic means coupled to each card for use in driving the cards individually into and out of printing position, and

a plurality of thin printing plates disposed parallel to each other and transverse to said cards, each plate being secured to one of said cards whereby each card can drive its printing plate to perform a printing operation,

each printing plate including an elongated portion having a printing means at one end and a pivot point at the opposite end, the printing plate also including a hammer portion which extends from the elongated portion and is secured to its card so that the plate can be driven by the card.

4,211,494

DEVICE FOR GUIDING THE PRINTER NEEDLES IN A MOSAIC NEEDLE PRINTER

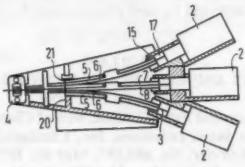
Philipp-Josef Fischer, and Richard Reier, both of Holzkirchen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich

Filed Mar. 22, 1978, Ser. No. 888,849

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713886

Int. Cl.[2] B41J *3/12*

U.S. Cl. 400—124 **9 Claims**



1. A device for guiding print needles in a mosaic needle printer print head assembly from adjacent a needle movement power means of a drive head assembly to adjacent a print zone where the needles are to be brought together in at least one row comprising: a print head assembly having a drive head assembly with power means affixed thereto and a print zone end spaced from the drive head assembly, a plurality of sets of guide plates formed of two guide plates having opposed surfaces, needle guiding tracks formed in at least one of the op-

posed surfaces and being closed by a portion of the other opposed surface, each such plate having a power end and a print end, the track diverging from the print end to the power end, means for removing the guide plates from the print head assembly including each of the guide plate sets being removable from the print head assembly and being easily disassemblable to separate the plates of each set from one another, and the sets being mountable on the print head intermediate the drive head assembly and the print zone end, each of the plates in each set being attached to the other plate through a snap together connection whereby the individual plates may each be removed from the print head assembly without disassembly of the drive head assembly.

4,211,495

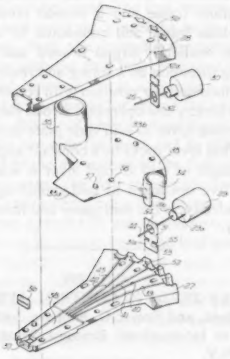
HEAD FOR A MOSAIC PRINTER

Robert E. Einem, Glendale; Joseph A. Richards, Tarzana, and Jerzy R. Gassowski, Burbank, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 875,305, Feb. 6, 1978, Pat. No. 4,158,909, which is a continuation-in-part of Ser. No. 825,409, Aug. 17, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 965,296

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **6 Claims**



1. A mosaic printing head comprising: first means including a first plurality of wire impact members each with an associated first electromagnetic thrust drive device, said first means including a first generally planar wire guide plate containing open grooves guiding said first wire impact members into general convergence in the plane of said first guide plate, said first drive devices being arranged with axes in a plane along an edge of said first guide plate; second means including a second plurality of wire impact members each with an associated second electromagnetic thrust drive device, said second means including a second generally planar wire guide plate containing open grooves in one surface guiding said second wire impact members into general convergence in the plane of said second guide plate, said second drive devices being arranged with axes in a plane and along an edge of said second guide plate; a wedge having an apex and side surfaces; and third means for holding the grooved surfaces of said first and second plates against respective side surfaces of said wedge, closing all of said grooves, said first and second wire impact members having substantially the same direction of convergence toward the apex of said wedge.

4,211,496

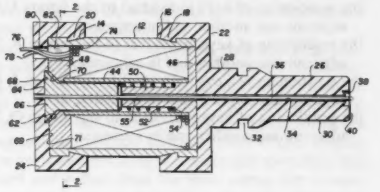
PRINTING SOLENOID

James E. Naylor, Cazenovia, N.Y., assignor to Small Business Administration, Elmira and Data Machines International, Inc., Ithaca, both of, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,569

Int. Cl.² B41J *3/10*

U.S. Cl. 400—124 **11 Claims**



1. A wire printer solenoid assembly particularly adapted for low voltage, typically 12 volt DC operation, comprising, in combination:

a generally cylindrical solenoid housing having end cap retaining means fore and aft on the outer surface thereof;

a front and rear end cap, each having at least one distal projection, engageable with said retaining means on said housing;

said front end cap including a forwardly projecting nose section and additionally including an axial bore therein adapted to operate as a guide for an axially moveable print wire;

a three piece bobbin located in said housing intermediate said end caps and consisting of front and rear end pieces secured to opposite ends of a non-magnetic stainless steel cylindrical core having a wire solenoid in the form of an electrical coil wound thereon;

said front end piece having a cylindrical portion projecting into said cylindrical core and having an axial bore therein also adapted to operate as a guide for said print wire and having a reduced diameter portion with respect to the inner diameter of said core to provide a space for a compression spring and terminating in a larger diameter portion for acting as an abutment for a compression spring;

a compression spring located in said core around said projecting cylindrical portion of said front end piece and having one end contacting said larger diameter portion;

a length of print wire;

an armature secured in a predetermined manner to said length of print wire and being located partially at least in said cylindrical core and reciprocally moveable therein and being in contact with said compression spring which acts to bias said armature against said rear cap when the wire solenoid is unenergized, said armature however being moved forward until stopped by the rear end piece of said bobbin when the wire solenoid is energized whereupon said print wire projects from the nose portion of said front end cap and thereby makes an impacted impression of a dot upon a given media.

4,211,497

DATA INPUT SYSTEM

Edward B. Montgomery, 6720 Greenwich La., Dallas, Tex. 75230

Continuation-in-part of Ser. No. 670,686, Mar. 29, 1976, abandoned, which is a continuation of Ser. No. 447,218, Mar. 1, 1974, abandoned. This application Mar. 13, 1978, Ser. No. 886,102

Int. Cl.² B41J *5/10*

U.S. Cl. 400—486 **13 Claims**

1. A keyboard apparatus comprising:

means defining a plurality of keys including at least one key individual to each of selected ones of the letters compris-

ing the standard 26 letter alphabet arranged in a plurality of rows;

the keys being positioned in a predetermined array characterized by the positioning of selected keys individual to selected letters that are frequently used in sequence adjacent one another and in accordance with such sequence, and including the following groupings:

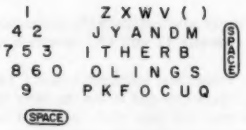
the positioning of keys individual to the letters T, H and E adjacent one another and in sequence;

the positioning of keys individual to the letters I, N and G adjacent one another and in sequence;

the positioning of keys individual to the letters A, N and D adjacent one another and in sequence;

the positioning of keys individual to the letters I, O and N adjacent one another and in sequence; and

the positioning of keys individual to the letters O, N and E adjacent one another and in sequence;



the keys having actuating surfaces each normally positioned for cooperation with the actuating surfaces of the remaining keys to define a predetermined surface configuration; means extending between the keys and comprising a generally regular continuation of the predetermined surface configuration for facilitating sliding movement of the fingers of an operator between adjacent keys, the sliding movement being substantially parallel to the predetermined surface configuration without requiring substantial movement of the fingers of the operator in direction generally normal to the predetermined surface configuration thereby providing for the sequential actuation of one of the predetermined array of keys by a sliding action of a single finger of the operator across the keys comprising the predetermined array of keys; and

each of the keys being adapted for actuation in response to minimum movement of the fingers of an operator perpendicular to the predetermined surface configuration.

4,211,498

PAPER CUTTING AND PERFORATED LINE FORMING DEVICE OF PRINTER

Munetaka Shimizu, Kawagoe, and Yoshimasa Takeda, Tokyo, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

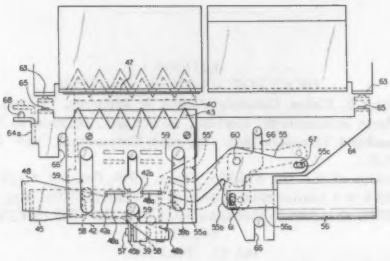
Filed Jan. 18, 1979, Ser. No. 4,600

Claims priority, application Japan, Jan. 20, 1978, 53-4610; Jan. 20, 1978, 53-4611

Int. Cl.[2] B41J *3/24*

U.S. Cl. 400—621 **7 Claims**

1. A paper cutting and perforated line forming device for a printer comprising a slide plate mounted on the machine frame of said printer for one reciprocal movement by a predetermined stroke in relation to the printing operation in the printer, a paper cutting lever device pivoted to said printer machine frame and operatively connected to the paper cutting device of said printer, said paper cutting lever device being normally biased in one direction by a spring and adapted to move said paper cutting device to the operative position when the lever device is rocked in the opposite direction against the action of said spring, a slide plate connection lever pivoted to said paper cutting lever device for selectively engaging said slide plate, said slide plate connection lever being adapted to rock said paper cutting lever device when the slide plate connection lever is engaged by said slide plate as the slide plates moves on the outward stroke of the reciprocal movement, a slide plate connection lever operation member engaging said slide plate connection lever and adapted to be operated by an electromagnetic device to cause said slide plate connection lever to selectively engage said slide plate, a switching lever so disposed that when operated, said switching lever is moved out of the operation paths of both said paper cutting device and paper cutting lever device and when not operated, the switching lever moves into the operation path of one of said paper cutting device and paper cutting lever device to regulate the operation stroke of the paper cutting device to a distance just sufficient to form a perforated line on a paper and an electromagnetic device for selectively operating said switching lever, said paper cutting lever device comprising a first lever having said



slide plate connection lever pivoted thereto and pivoted to said printer machine frame and a second lever pivoted to said printer machine frame and connected to said paper cutting device to be resiliently urged toward said first lever in the paper cutting direction by a spring and resiliently restrained in a predetermined angular position with respect to the first lever by a stop, whereby the operation stroke distance of said slide plate connection lever as said slide plate moves is set constant so that said first lever rocks by a constant angle and the rocking movement angle of said second lever is selectively regulated by the selective operation of said switching lever to make it possible to selectively cut said paper and form a perforated line on the paper.

4,211,499

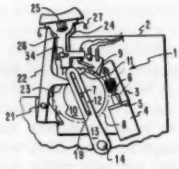
PAPER FEEDING CONTROL APPARATUS

Ronald E. Hunt, and Ernest G. Souliere, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,360

Int. Cl.[3] B41J *13/02*

U.S. Cl. 400—637.6 **10 Claims**



1. Apparatus for controlling the feeding of paper about a printer platen, said apparatus comprising;

(a) means operable for initiating a paper feeding cycle to position a sheet of paper about said platen for printing;

(b) means for effecting front and rear roller feeding of said sheet and aligning said sheet;

(c) cam means coupled to said effecting means for operating said effecting means;

(d) drive means coupled to said cam means for operating said cam means; and

(e) switch means coupled to said initiating means when operated for initiating a paper feeding cycle for starting said drive means.

4,211,500

TIP-PUSHED TYPE MECHANICAL PENCIL

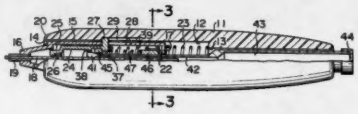
Junichi Hashimoto, Saitama, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1978, Ser. No. 973,718

Claims priority, application Japan, Dec. 27, 1977, 52-156726

Int. Cl.² B43K *21/16*

U.S. Cl. 401—65 **10 Claims**



1. A tip pushed type mechanical pencil in which a lead is fed forward by pressing the front end of a pencil against a writing surface or the like and then releasing it; comprising an outer cylinder, a first inner cylinder fitted inside the outer cylinder so as to be axially movable and having a ferrule on its front end, first spring means for urging the first inner cylinder to cause the ferrule to project out of the front end of the outer cylinder, a second inner cylinder fitted inside the first inner cylinder to be axially movable and carrying a packing in its front end portion which grasps a lead, the second inner cylinder being adapted to cooperate with the first inner cylinder for movement therewith as the latter moves in a direction away from the front end, second spring means for urging the second inner cylinder towards the front end, delay means for moving the second inner cylinder towards the front end in delayed relationship with respect to the movement of the first inner cylinder as a force which urges the first inner cylinder to move away from the front end is removed, a lead passage tube fitted within the second inner cylinder for axial movement and carrying a chuck assembly on its forward end, the lead passage tube being adapted to cooperate with the movement of the first inner cylinder toward the front end for movement in the same direction, third spring means for urging the lead passage tube in a direction away from the front end, and a chuck ring slidably mounted within the second inner cylinder.

4,211,501

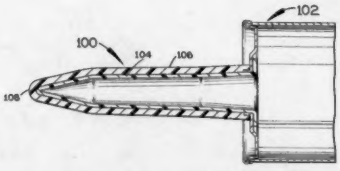
SPREADING TOOL

Rosa M. Pedroso, and Raul I. Pedroso, both of 4120 S.W. 96th Ave., Miami, Fla. 33165

Filed Nov. 3, 1978, Ser. No. 957,571

Int. Cl.² E04F *21/30, 21/32*

U.S. Cl. 401—261 **7 Claims**



1. A tool for use in spreading soft, malleable material along an inner corner formed by angular surfaces, comprising:

a hard core with an elastomeric covering, having a durometer hardness in the range from 20 to 70 Shore A, on said core together forming a spreading nose for said tool;

a handle for said spreading nose;

said elastomeric covering tapering inwardly and longitudinally, forming an apex angle in the range from 20 to 90 degrees, to a narrow tip;

said elastomeric covering having a working edge with longitudinally converging portions for engaging the angular surfaces of the inner corner;

said working edge having a blunt tip to form a bead of soft malleable material at said corner;

said elastomeric covering supporting said working edge having substantially uniform thickness of up to substantially ¼ inch and said core providing substantially uniform support to said working edge such that said elastomeric covering compresses and said working edge conforms and seals against the angular surfaces, even if said angular surfaces are somewhat irregular, when said spreading nose is pressed and pulled along the inner corner for substantially confining said soft malleable material to said spreading nose and a uniform bead formed by the blunt tip of said working edge at the inner corner.

4,211,502

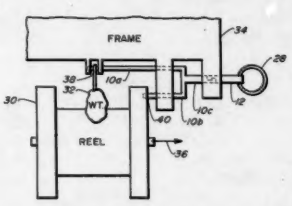
BREAKAWAY PIN RELEASE

Wayne R. Tausig, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 6, 1979, Ser. No. 55,923

Int. Cl.² B25G *3/18*

U.S. Cl. 403—324 **6 Claims**



1. A breakaway pin release assembly comprising:

a collar having a bore therein;

a release pin slidably mounted in said collar, said release pin having a first end adapted for coupling to a release mechanism, the release mechanism being actuated by linear movement of said release pin along its longitudinal axis, said release pin having a mating portion adapted for interlocking with another pin within said collar;

a pull pin having a first end adapted to be pulled and a mating portion adapted for interlocking with the mating portion of said release pin within said collar, said release pin and said pull pin slidable as a unit through said collar as long as the mating portions of said pull pin and said release pin are interlocked within said collar, said pull pin being free to separate from said release pin when said mating portions are not within said collar.

4,211,503

BIMETALLIC CORROSION RESISTANT STRUCTURAL JOINT AND METHOD OF MAKING SAME

Marvin L. Peterson, and Orwin G. Maxson, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Nov. 13, 1978, Ser. No. 960,348

Int. Cl.² E02D *5/60*

U.S. Cl. 405—216 **20 Claims**

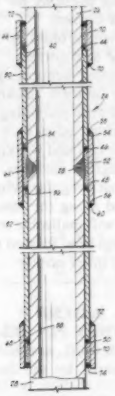
1. A corrosion resistant bimetallic structure comprising:

a steel structural element;

a corrosion resistant, non-ferrous metal overlay joined to

said steel structural element and positioned over, and in contact with, a surface area to be protected on the element, said non-ferrous metal including a terminal edge;

at least one corrosion resistant non-ferrous metal bridging element secured to an exposed surface of said non-ferrous metal overlay on the opposite side thereof from its side in



contact with the steel structural element, and including a portion projecting beyond said terminal edge and spaced from said steel structural element; and

sealing means in the space between said bridging element portion and said steel structural element for preventing ingress of a corrosive fluid through said space to said terminal edge.

4,211,504

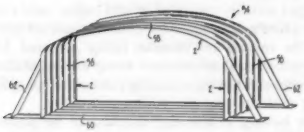
HIGH STRENGTH CORRUGATED METAL PLATE AND METHOD OF FABRICATING SAME

Eugene W. Sivachenko, 6851 Waverly, Redding, Calif. 96001

Division of Ser. No. 699,289, Jun. 24, 1976, Pat. No. 4,099,359. This application Apr. 26, 1978, Ser. No. 900,383

Int. Cl.[2] E02D *5/00*

U.S. Cl. 405—284 **5 Claims**



1. A load-supporting structure comprising at least one wall defined by a corrugated metal plate having a plurality of generally sinusoidal undulations defined by alternating, contiguous convex portions and concave portions, the spacing between adjacent concave and convex portions in a direction transverse to the plate being at least about four inches and the spacing between adjacent concave portions and between adjacent convex portions parallel to the plate being at least about 12 inches, a corrugated anchoring plate disposed transversely to the longitudinal extent of the undulations for anchoring an end of the first mentioned plate, the anchoring plate being shaped and dimensioned complementarily to the corrugated plate of the wall and oriented transversely with respect thereto, means securing lower ends of the wall to the anchoring plate bracing means connecting an upper portion of the wall with a portion of the anchoring plate remote from the lower end of the wall and comprising a corrugated bracing plate dimensioned complementarily to the wall and the anchoring plate and positioned perpendicular with respect to both, and means for securing the bracing plate to the wall at least adjacent an upper end of the wall.

4,211,505

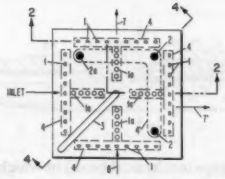
FLUIDIC TRANSPORT INTERSECTION

John P. Babinski, Essex Junction; Bruce I. Bertelsen, Essex; Karl H. Raacke, Essex Junction, and Valdeko H. Sirgo, Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 618,655, Oct. 1, 1975, abandoned. This application Dec. 23, 1976, Ser. No. 753,672

Int. Cl.[2] B65G *51/02*

U.S. Cl. 406—19 **9 Claims**



6. Transport apparatus for guiding a moving wafer comprising

a track,

vacuum means disposed in said track for stopping said wafer at a given location in said track when said wafer is moving in a first direction,

means having a plurality of units disposed in said track for directing fluid toward said given location, said units being arranged to maintain said wafer in substantially said given location when all of said units are directing fluid toward said given location,

means for detecting the presence of said wafer at said given location, and

means responsive to said detecting means for controlling the fluid of one of said units to move said wafer in a second direction from said given location.

4,211,506

METHOD AND APPARATUS FOR THE METERED CONVEYING OF PULVERULENT SOLIDS

Ferdinand List, Marl; Julius Klos, Recklinghausen, and Helmut Alfs, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Apr. 4, 1978, Ser. No. 893,460

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1977, 2717920

Int. Cl.[2] B65G *53/48*

U.S. Cl. 406—55 **1 Claim**

1. An eccentric screw pump for the metered conveying of pulverulent solids comprising:

(a) a rotatable horizontal elongated pump shaft having a first end and a second end and means connecting said first end for rotation thereof;

(b) a receiving chamber at said first end of said pump shaft;

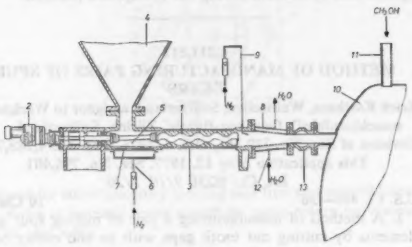
(c) a storage container open to atmospheric pressure above said receiving chamber for delivering said pulverulent solids;

(d) a cylindrical pump chamber connected to said receiving chamber and surrounding said pump shaft at said second end;

(e) an elastomer stator lining the inside of said cylindrical pump chamber and having a helical configuration with an elongated cross section and a double pitch;

(f) a rotor on said pump shaft at said second end having a helical configuration with a circular cross section working in said stator;

(g) an apparatus in which there is superatmospheric pressure of a gaseous system;
(h) a transition section having means for cooling connecting said apparatus and said cylindrical pump chamber;
(i) means for flushing said transition section with an inert gas; and



(j) means for pneumatically loosening said pulverulent solids located in said receiving chamber comprising a bottom sintered metal plate and means for delivering an inert gas under pressure therethrough.

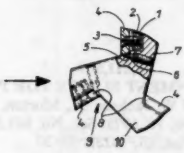
4,211,507

ROTARY CUTTING TOOL WITH RADIALLY ADJUSTABLE, REVERSIBLE TOOL BITS

Dieter Kress, Aalen, and Friedrich Häberle, Lauchheim, both of Fed. Rep. of Germany, assignors to MAPAL Fabrick für Präzisicnswerkzeuge Dr. Kress KG, Aalen, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,726
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741130
Int. Cl.² B26D *1/12*
U.S. Cl. 407—37 **6 Claims**

1. In a rotary cutting tool defining an axis of rotation and including a cutter head, at least one reversible tool bit having a cutting edge projecting from said cutter head, and fastening means releasably fastening said bit to said head, the improvement in the fastening means which comprises:
(a) an abutment member,
(1) said cutting head being formed with a first recess receiving said abutment member and a second recess receiving said bit, said cutting head having a surface facing in the direction of rotation of the cutting head and extending radially of the axis of rotation with said second recess formed in said surface and said first recess spaced from said second recess in the direction trailing said second recess in the direction of rotation of the cutting head,
(2) a wall portion of said cutter head separating said first and second recesses;
(b) threaded fastening means extending through said bit and said wall portion and into said abutment for clamping said bit to said wall portion;
(c) said bit being plate-shaped and multi-sided and having two major faces and an edge face extending around the peripheral multi-sided edge of each said major face and connecting said major faces, said edge face having a portion corresponding to each side of said major faces and each said portion extending at an oblique angle to said major faces;
(d) said wall portion forming a base surface of said second recess and one of the major faces of said bit being in juxtaposition to said base surface and said cutter head forming at least two lateral side surfaces of said second recess, each lateral side surface being in abutting relation to one of said portions of said edge face, one of said portions of said edge face projecting from said second recess radially outwardly from said cutting head relative to the axis of rotation thereof and including said cutting edge; and



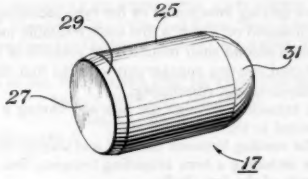
(e) backing means mounted in said cutting head and engaging one of said portions of said edge face disposed in abutting relation to one of said lateral side surfaces of said second recess for shifting said bit in the radial direction relative to the axis of rotation of said cutter head.

4,211,508

EARTH BORING TOOL WITH IMPROVED INSERTS

Herbert C. Dill, and Stanley R. Scales, both of Houston, Tex., assignors to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 485,658, Jul. 3, 1974, abandoned. This application Feb. 13, 1976, Ser. No. 657,990
Int. Cl.² B26D *1/00*; B21K *5/02*
U.S. Cl. 407—120 **2 Claims**



1. An improved earth boring tool of the type having at least one sintered tungsten carbide insert with a substantially cylindrical retaining surface interferringly secured to the wall of a retaining hole, the improvement comprising said retaining surface roughened such that in any lineal increment of at least 0.010 inch, there are at least three asperities at least 0.001 inch long and at least 0.00005 inch deep when measured with a stylus point with a 0.0005 inch radius.

2. An improved method of retaining tungsten carbide inserts in an earth boring tool, said method comprising the steps of:
drilling and reaming a plurality of holes in selected locations on the earth boring tool;
sintering a plurality of tungsten carbide inserts with a binder selected from the group consisting of cobalt, nickel or iron;
grinding a substantially cylindrical wall surface on the inserts that are nominally larger in diameter than the drilled and reamed holes;
roughening the wall surface of the inserts such that any lineal increment of at least 0.010 inch has at least three asperities which are at least 0.001 inch long and at least

0.00005 inch deep when measured with a stylus point with a 0.0005 inch radius;

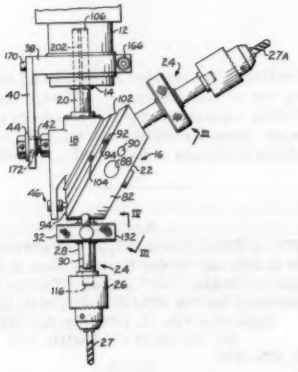
and forcing the inserts interferringly into the mating drilled and reamed holes.

4,211,509

WEAR AND ALIGNMENT SLEEVE FOR POWER TOOL

Otto E. Dietrich, 617 W. Jackson St., Morton, Ill. 61550

Filed Nov. 16, 1978, Ser. No. 961,399
Int. Cl.[2] B23B *39/20*
U.S. Cl. 408—35 **5 Claims**



1. A tool driving attachment of the type including a turret rotatably mounted on a hub, a first shaft rotatably mounted in the hub and a second shaft mounted for rotation in the turret and for aligned rotating engagement with the first shaft in the hub, the improvement comprising:

a sleeve extending through the hub and having a first end connected to the first shaft; and

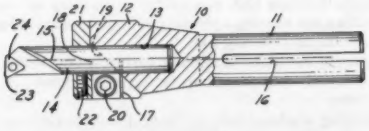
means for venting between the first and second shafts, said means including a bore extending between first and second ends of the first shaft.

4,211,510

ADJUSTABLE BORING HEAD

David A. Hopkins, Troy, Mich., assignor to The Valeron Corporation, Oak Park, Mich.

Filed Sep. 5, 1978, Ser. No. 939,444
Int. Cl.[2] B23B *31/04*
U.S. Cl. 408—186 **9 Claims**



1. An adjustable boring tool comprising an axially extending shank, an integral socket extending from one end of said shank having a cylindrical bore with an axis parallel and offset relative to the axis of said shank, a transverse slot extending through a wall of said socket intersecting said bore and a longitudinal slot extending through one side of said socket wall from the end thereof to an intersection with an intermediate portion of said transverse slot, a cylindrical boring bar having a rotationally adjustable fit within said cylindrical bore, and means for clamping the slotted segments of said socket wall against said cylindrical boring bar in adjusted position.

4,211,511

METHOD OF MANUFACTURING PAIRS OF SPUR GEARS

Erich Kotthaus, Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle, Zürich, Switzerland

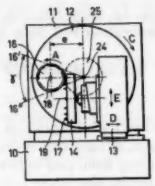
Division of Ser. No. 729,351, Oct. 4, 1976, Pat. No. 4,183,703.
This application May 12, 1977, Ser. No. 796,401
Int. Cl.[2] B23F *9/10, 5/20*
U.S. Cl. 409—26 **10 Claims**

1. A method of manufacturing a pair of mating spur gear elements by cutting out tooth gaps with an end cutter head element wherein one of two elements—one of said mating spur gear elements having an axis and the end cutter head element having an axis—is mounted on a rolling cradle having an axis, comprising the steps of:

(I) imparting to the one of said two elements, mounted on the rolling cradle, an arcuate-shaped generating movement,

(II) (a) arranging and maintaining the axis of the one mating spur gear element being cut parallel to the axis of the rolling cradle, and

(II) (b) simultaneously arranging and maintaining the axis of the end cutter head element substantially perpendicular to the axis of the rolling cradle during said arcuate-shaped generating movement,



(III) moving one of the axis of the one mating spur gear element and the axis of the end cutter head element relative to the other axis through said arcuate-shaped generating movement around the axis of the rolling cradle,

(IV) coinciding the center of the arcuate-shaped generating movement with the center of the other mating spur gear element to be produced, and

(V) fabricating the other mating spur gear element by a plunge cut operation without any generating movement to produce gear teeth having a straight tooth depth profile in a radial direction.

4,211,512

ROTARY TABLE WITH BALLSCREW DRIVE

Frank Zankl, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Dec. 20, 1978, Ser. No. 971,341
Int. Cl.[2] B23Q *1/16, 17/18*
U.S. Cl. 409—221 **6 Claims**

1. A rotary table drive comprising:

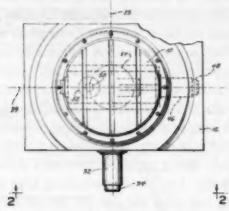
a frame;

a tabel journaled to said frame for rotation about a first axis;

a first linear slide slidably mounted on said frame for movement along a second axis perpendicular to said first axis;

a second linear slide slidably mounted on said first linear slide for movement along a third axis perpendicular to both said first and second axes;

a rotary crank coupling said second linear slide to said table; and



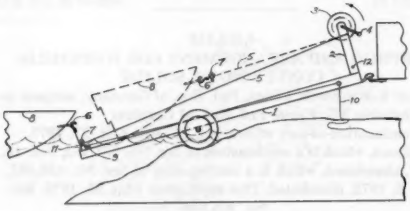
means for simultaneously moving said first and second linear slides at variable linear speeds to cause rotary movement of said table.

4,211,513

BOAT LOADING DEVICE

Alistair M. Hosie, 219 Superior St., Victoria, B.C., Canada (V8V-1T4)

Filed Jun. 16, 1978, Ser. No. 886,523
Int. Cl.[2] B60P *3/10*
U.S. Cl. 414—559 **5 Claims**



1. In combination with a boat trailer adapted to be towed and having an elongated bed provided with support means for cradling a boat in centered position loaded on the trailer, and further provided with a loading winch stationed at its forward end including a loading line extendable therefrom to be fastened to the bow of the boat for loading the same from the water onto the trailer, guide means in running engagement with the loading line by which to draw the bow of the boat to the after end of the trailer in transversely centered loading position, said guide means comprising a captive line guide through which the line is free to run and that remains captive on the line, and line guide mounting means fixed in transversely centered position on the trailer bed adjacent the after end thereof, said line guide being engageable with the mounting means for locating the line guide substantially at the level of the bed while drawing the boat into loading position, and being selectively releasable from such mounting means thereafter to permit loading of the boat onto the trailer from such loading position.

4,211,514

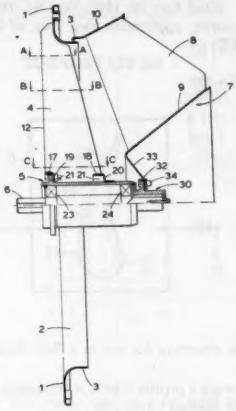
MIXED FLOW FAN

Stanley P. Hawes, Walton-on-Thames, England, assignor to Airscrew Howden Limited, Weybridge 2, England

Filed Dec. 14, 1977, Ser. No. 860,650
Claims priority, application United Kingdom, Dec. 22, 1976, 53468/76
Int. Cl.[2] F04D *29/44*
U.S. Cl. 415—191 **3 Claims**

1. A mixed flow unducted direct discharge fan comprising:

(a) a direct discharging mixed flow rotor,
(b) a support ring,
(c) bearing support means for the rotor,



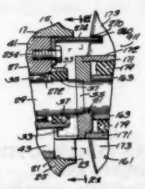
(d) a plurality of vanes positioned to extend between support ring and the bearing support means,
(e) the vanes being angled to impose on air entering the fan a swirl in the opposite direction to swirl produced by the rotor in operation.

4,211,515

MARINE PROPELLER FISH LINE AND WEED CUTTER

Donald A. Henrich, Lake Villa, and Edgar Rose, Glencoe, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 878,323, Feb. 16, 1978. This application Mar. 7, 1979, Ser. No. 18,122
Int. Cl.[2] B63H *1/26*
U.S. Cl. 416—146 R **4 Claims**

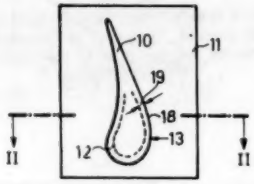


1. A marine propulsion device including a lower unit having a gear case including a bearing retainer having a radially extending rib, a propeller shaft rotatably supported by said bearing retainer and including a portion extending rearwardly of said lower unit, a propeller mounted on said rearward portion of said propeller shaft for common rotation therewith and including a radially outwardly extending blade with a leading edge having therein a forwardly open slot, and cutter means comprising an L-shaped cutter including a radially extending leg fixedly mounted on said rib and a radially outer tooth element having a tooth portion which extends rearwardly for passage through said slot so as to provide a shearing action in response to rotation of said propeller.

4,211,516
BLADE STRUCTURE FOR FLUID FLOW ROTARY MACHINE

Peter Speil, Heidelberg, Fed. Rep. of Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 20, 1977, Ser. No. 789,245
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617927
Int. Cl.[2] F01D 5/22
U.S. Cl. 416—191 7 Claims



1. A blade structure for use in a fluid flow rotary machine comprising:

a blade having a profile which is thickened at least within an enlarged leading edge; and

a cover plate connected to the blade at the blade head thickened region by at least one welded joint, the welded joint forming a substantially closed loop and having an elliptical configuration with the major axis of the elliptical welded joint extending approximately in the direction of the longitudinal axis of the thickened region of the blade profile, the welded joint including at least one looping welded seam arranged substantially within a periphery of the blade profile;

said looping welded seam being formed over only a portion of the blade profile and at least a portion of said looping welded seam being spaced from the periphery of the blade profile by a distance sufficient to prevent any detrimental influence thereon.

4,211,517
DETERGENT SUPPLY CONTROL FOR AUTOMATIC DISHWASHER

Rolyn A. Schmid, Hayward, Wis., assignor to Bender Machine Works, Inc., Hayward, Wis.

Filed Nov. 27, 1978, Ser. No. 963,795
Int. Cl.[2] F04B 49/06; F16R 31/42; B08B 3/00
U.S. Cl. 417—12 11 Claims

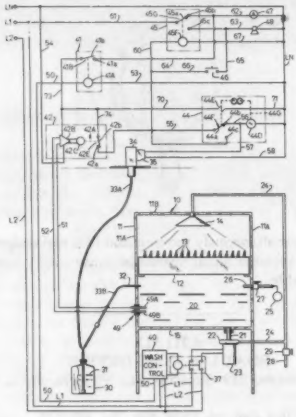
1. In combination:

a motor-driven supply pump for supplying a substance to a liquid solution which changes the conductivity of said solution;

and control means for operating said supply pump and comprising a timer and a conductivity sensor,

said timer being operable to enable said conductivity sensor to effect operation of said timer and said supply pump in response to a low conductivity level,

said timer being further operable to prevent said conductivity sensor from effecting operation of said timer and said supply pump in response to a low conductivity level after

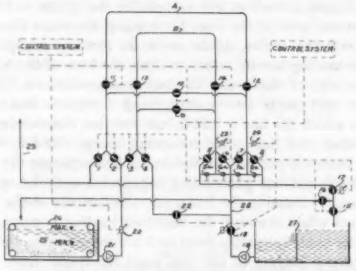


said timer has operated for a predetermined interval of time.

4,211,518
METHOD AND ARRANGEMENT FOR HYDRAULIC CONVEYING OF SOLIDS

Werner Kortenbusch, Lünen, Fed. Rep. of Germany, assignor to Ruhrkohle AG, Essen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 847,916, Oct. 27, 1977, abandoned, which is a continuation of Ser. No. 768,352, Feb. 14, 1977, abandoned, which is a continuation of Ser. No. 638,483, Dec. 8, 1975, abandoned. This application May 15, 1978, Ser. No. 906,846
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1974, 2457942
Int. Cl.[2] F04F 11/00
U.S. Cl. 417—54 8 Claims



1. An arrangement for hydraulically conveying solids of different specific weights in form of slurries comprising, in combination, at least two elongated chambers lack having a different volume; a source of slurry; a source of pressurized hydraulic fluid; conduit means including slurry supply conduits communicating said source of slurry with said chambers for admission of slurry into the latter, a discharge conduit communicating with said chambers, and fluid conduits communicating said source of hydraulic fluid with said chambers for expulsion of admitted slurry from the chambers; valve means operative for selectively cyclically establishing and interrupting communication of said conduits with said cham-

bers; means for detecting the specific weight of the solid component in the slurry supplied by said slurry source; and means for selecting one of the chambers as a function of the detected specific weight of the solid component of the slurry.

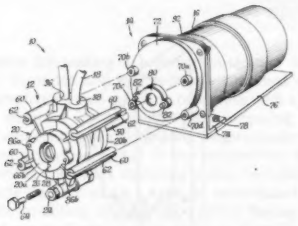
8. A method of hydraulically conveying solids of different specific weights in form of slurries, with an arrangement having at least two chambers each having a different effective volume, comprising the steps of sensing the specific weight of a slurry to be conveyed to determine whether it is below or above a predetermined limit; selecting the chamber with the maximum chamber length when the specific slurry weight is below said predetermined limit, and selecting the chamber with the minimum chamber volume when the specific slurry weight is above said predetermined limit; admitting the slurry into one of the chambers having the selected chamber volume hydraulically expelling the slurry from said one chamber so as to convey the expelled slurry to a remote location and simultaneously with the step of expelling also admitting slurry into the other of said chambers having the selected chamber volume; and repeating the preceding steps.

4,211,519

FLUID PUMP AND QUICK RELEASE MOUNTING ARRANGEMENT THEREFOR

Lawrence R. Hogan, Lake Villa, Ill., assignor to Cole-Parmer Instrument Company, Chicago, Ill.

Filed Aug. 29, 1977, Ser. No. 828,482
Int. Cl.[2] F04B *43/12*
U.S. Cl. 417—360 **18 Claims**



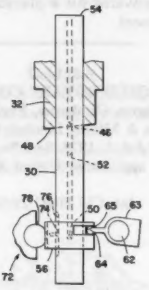
1. In a peristaltic pump which includes a housing defining a longtiudinal axis, said housing having an internal chamber and an opening communicating with said chamber, a length of tube extending through said opening and having a portion looped internally of said chamber so as to form a cntinuous flow passage through said tube, and displacement means supported within said chamber and operatively associated with said tube to facilitate a peristaltic pumping action within said tube; the improvement wherein said housing comprises two housing sections hingedly connected to each other for relative movement between open and closed positions about a hinge axis substantially coplanar with and spaced from said longitudinal axis in substantially parallel relation therewith, said two housing sections defining a parting plane therebetween substantially coplanar with said longitudinal and hinge axes when said housing sections are in relatively closed positions wherein said housing sections define said internal chamber and enclose and support said displacement means, said housing sections in their said open positions facilitating removal of said displacement means and manipulation and replacement of said tube, each of said housing sections defining a tube receiving opening communicating with said chamber and opening externally of said housing, said parting plane passing through said openings in the longitudinal direction thereof such that when said housing sections are in their said open positions, said tube may be inserted within each of said openings by movement of said tube in a direction substantially transverse to its longitudinal axis, said housing sections being adapted to retain said tube in assembled relation therewith when said housing sections are moved between their said open and closed positions.

4,211,520

TIMING CONTROL FOR SLEEVE METERING FUEL SYSTEM

Stanley J. Kranc, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 20, 1978, Ser. No. 871,053
Int. Cl.[2] F02M *59/28*
U.S. Cl. 417—494 **18 Claims**



1. In an engine fuel pump having a fill port in a plunger closed and opened during plunger strokes by a face of a relatively stationary barrel surrounding the plunger, a spill port in said plunger closed and opened during plunger strokes by a relatively stationary collar surrounding the plunger and linkage means operable by a governor or the like for adjusting the collar axially on said plunger to vary the separation of the barrel face from the collar and thereby the volume of fuel delivered per plunger stroke, an improvement comprising:

an oblique surface serving as said barrel face; and

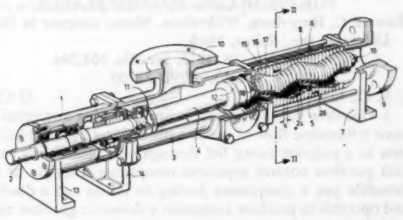
means for engaging said collar and plunger for adjustably setting the angular position of said plunger about its cylindrical axis to adjust injection timing of said fuel pump.

4,211,521

ECCENTRIC DISC PUMP

Max Streicher, Wangen im Allgäu, Fed. Rep. of Germany, assignor to Fördertechnik Streicher GmbH, Wangen im Allgäu, Fed. Rep. of Germany

Filed Mar. 14, 1978, Ser. No. 886,356
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712121
Int. Cl.[2] F04C *1/06, 29/04*
U.S. Cl. 418—48 **21 Claims**



1. An eccentric disc pump having a plurality of individual axially interconnected pump stages of predetermined width, a stator disc in each pump stage enclosing a central cavity, a shaft carried in said central cavities, a rotor disc mounted in each pump stage for rotation eccentrically in said central cavity, successive rotor discs being angularly offset relative to the rotor disc of a preceding pump stage and adjacent stator and

rotor discs being angularly offset relatively to each other at angles of displacement, coupling means respectively engaging each stator disc with that of an adjacent pump stage and positively locating such adjacent stator disc in positions offset by a second angle one half of the first mentioned angular displacement between corresponding adjacent rotor discs whereby in each pump stage the cavity of the stator disc forms an enveloping curve for the path of the rotor disc rotatable therein, coupling means are provided for a plurality of different second angles of displacement.

4,211,522

OIL-INJECTED ROTARY COMPRESSORS

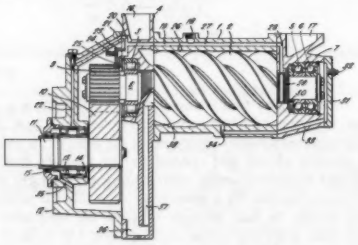
Howard H. J. Pidgeon, Camborne, England, assignor to Compair Construction & Mining Limited, Cornwall, England

Filed Jul. 3, 1978, Ser. No. 921,499

Claims priority, application United Kingdom, Jul. 5, 1977, 28163/77

Int. Cl.[2] F04C *29/02*

U.S. Cl. 418—99 **4 Claims**



1. A method of draining oil from a transmission housing, of a rotary compressor comprising a compressor housing containing rotor means and having an inlet for gas to be compressed and a transmission housing, a shaft of the compressor extending into the transmission housing from the compressor housing, in which method the first portion of the compressor intake stroke, or rotation, is prevented from being filled with intake gas such that a depression of lower pressure than inlet pressure is created, said depression being applied via a bore to a sump portion of the transmission housing, so that the absolute pressure differential between the sump and the suction portion of the rotor means draws oil out of the sump and into the rotor means spaces.

4,211,523

GAS-FLOW CONTROL APPARATUS FOR EQUIPMENT FOR PRODUCING FOAMED PLASTIC

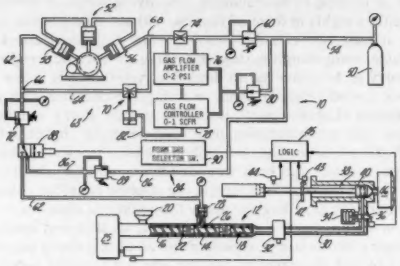
Edward C. Hunerberg, Wilbraham, Mass., assignor to Hoover Universal, Inc., Saline, Mich.

Filed Nov. 29, 1978, Ser. No. 964,744

Int. Cl.[2] B29D *27/00*

U.S. Cl. 425—4 C **13 Claims**

1. Gas-flow control apparatus for delivering a selected constant volumetric flow of gas to a plasticating means for dispersion in a polymer being fed through said plasticating means, said gas-flow control apparatus comprising a supply of compressible gas, a compressor having an intake and a discharge and operable to produce a constant volumetric gas flow output with a selected pressure value, supply conduit means connecting said gas supply with said compressor intake to deliver gas from said gas supply to said compressor at a pressure value less than said selected pressure value of said compressor output, discharge conduit means connecting said compressor discharge with said plasticating means, and a feedback loop system including feedback conduit means connected to said compressor discharge and to said compressor intake, said feedback loop system including regulating means controllable to divert a selected fraction of said compressor output to said compressor intake to thereby control the delivery to said plasticating



means of said selected constant predetermined volumetric flow of gas.

4,211,524

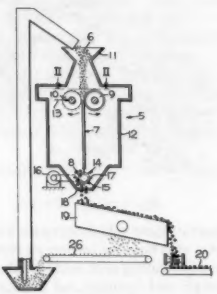
ROLLS FOR COMPACTING MILL

George J. Jennrich, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 10, 1978, Ser. No. 949,538

Int. Cl.[2] A23G *1/20*

U.S. Cl. 425—296 **3 Claims**



1. Apparatus by which agglomerative material (**6**) is compacted into a sheet (**7**) that can be broken in tablet-like bodies (**8**) of substantially uniform size and shape, said apparatus being of the type comprising a pair of opposing substantially cylindrical rolls (**9, 10**) that have parallel axes, and means (**11**) for feeding agglomerative material into the nip of said rolls while said rolls rotate in opposite directions and while one of said rolls is urged bodily towards the other with a force that causes the material to be compacted as it passes between the rolls (**9, 10**), said apparatus comprising:

A. each of said rolls (**9, 10**) having radially outwardly projecting ridges (**21**) thereon that are spaced apart by substantially uniform distances to define grooves (**22**) between the ridges (**21**);

B. all of the ridges (**21**) on a first one of said pair of rolls (**9**) being both parallel to each other and extending thereon solely in a circumferential direction around said first roll (**9**), and all of the ridges (**21**) on the other of said pair of rolls (**10**) being parallel to each other and extending thereon solely in a direction transverse to the direction in which the ridges (**21**) on the said first one of said pair of rolls (**9**) extend; and

C. each of said ridges (**21**)

(a) having a depth in the direction radial to the roll that is substantially greater than its width,

(b) having a root portion that joins the body of the roll at opposite concave fillets (25) of substantially large radius so that the bottom surface of each of said grooves (22) merges into its side surfaces around such fillets, and

(c) having it radially outermost portion (24) substantially tapered in cross-section,

so that each ridge (21) defines a slot (23) in a sheet (7) compacted by the rolls, which slot (23) opens to one surface of the sheet, extends transversely to slots (23) opening to the opposite surface of the sheet, and encourages the sheet to break substantially along the slot.

4,211,525

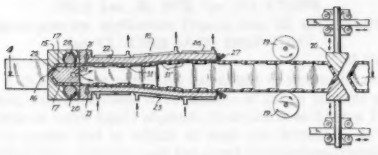
APPARATUS FOR MAKING STRETCHED, HOLLOW SHAPED STRANDS HAVING CORRUGATED INTERMEDIATE SUPPORTS

Heinz Vetter, Rossdorf, Fed. Rep. of Germany, assignor to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Dec. 5, 1978, Ser. No. 966,738

Int. Cl.[2] B29C *17/07*; B29D *23/03*; B29F *3/012*

U.S. Cl. 425—326.1 **4 Claims**



1. Apparatus for making a hollow non-circular tube of a transversely expanded and longitudinally stretched synthetic resin, said tube having two opposing tube walls with a plurality of support members joined thereto and extending therebetween, said support members extending longitudinally through said tube and being corrugated in the longitudinal direction; which apparatus comprises extruding means including an extrusion nozzle for extruding a tube of unstretched resin in thermoplastic condition, said extrusion nozzle having a plurality of paired opposed extrusion channels for forming said two opposing tube walls by extrusion, adjacent pairs of said extrusion channels being separated laterally to form said support members by extrusion, and flow control means for rhythmically increasing and decreasing the resistance to flow of resin through each extrusion channel whereby the extruded thickness of the two opposing tube walls is alternately increased and decreased, said apparatus further comprising calibration means, directly adjacent said extrusion nozzle and into which the extruded tube is passed, said calibration means including temperature-adjusting means for adjusting the temperature of said extruded tube until the resin is in a thermoelastic condition, forming means for laterally expanding and longitudinally stretching the temperature-adjusted resin tube while in a thermoelastic condition whereby alternately thicker and thinner portions of the opposing tube walls are differently transversely stretched and said support members are deformed into a longitudinally-corrugated condition, said calibration means further including cooling means for cooling the expanded and stretched tube to a temperature below the softening point of the resin.

4,211,526

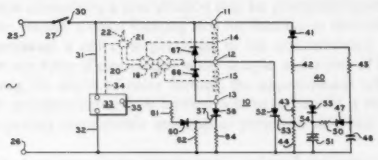
CONTROL SYSTEM FOR REDUNDANT VALVES

Roger A. Schilling, West St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 957,956

Int. Cl.[2] F23N *5/00*

U.S. Cl. 431—69 **9 Claims**



1. An electronic control system for redundant fluid flow valves that are adapted to be energized from an alternating current potential, including: condition responsive means adapted to be connected to a source of alternating current potential and capable of generating an initial timed output signal simulating the presence of a sensed condition, and then responding to the presence or absence of said sensed condition; said condition responsive means having an output signal when said condition is sensed timing circuit means energized concurrently with said condition responsive means with said timing circuit means including solid state switch means which is immediately caused to be conductive and subsequently is timed to a non-conductive state; said solid state switch means adapted to energize a first of said fluid flow valves to open said first valve when said solid state switch means conducts; second solid state switch means controlled by said condition responsive means with said second solid state switch means being conductive whenever said condition responsive means has either of said output signals; and said second solid state switch means adapted to connect a second of said fluid flow valves in a series circuit with said first fluid flow valve and current responsive safety means across said alternating current potential to maintain said valves in an energized state.

4,211,527

PROCESS FOR DYEING POLYESTER MATERIALS

Jean P. Luttringer, Rixheim, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 9, 1977, Ser. No. 858,997

Claims priority, application Switzerland, Dec. 14, 1976, 15705/76

Int. Cl.[2] D06P 5/00, 7/00

U.S. Cl. 8—526 14 Claims

1. Process for dyeing polyester fibers, or mixtures thereof with other fibers, by the exhaust method from an aqueous liquor, in which process the liquor contains 0.2 to 8.0 percent by weight, relative to the polyester fibers, of at least one alkaline-earth metal salt, aluminium salt or organic ammonium salt of a mono- or polyvalent aliphatic organic acid or of a mono- or polyvalent inorganic acid.

4,211,528

SOLUTIONS OF SUBLIMABLE DYES FOR THE PREPARATION OF SPECIAL INKS FOR FELT TIP MARKERS OR PENS

Georges Cuvelier, Lille, France, assignor to Dollfus-Mieg & Cie, Paris, France

Filed Jan. 20, 1978, Ser. No. 870,998

Claims priority, application France, Jan. 20, 1977, 77 01515

Int. Cl.[2] C09B 67/00; D06P 1/667

U.S. Cl. 8—471 3 Claims

1. A dye solution consisting essentially of one or more sublimable, water insoluble dyes capable of use in transfer printing, one or more liquid aliphatic hydrocarbons having 1 to 3 carbon atoms and in which at least one hydrogen atom is substituted by chlorine, and hexamethylphosphorotriamide in an amount of between 2 and 10% by weight of the liquid aliphatic hydrocarbon .

4,211,529

CHROME-TANNING

Heinrich Spahrkäs; Josef Müller; Ernst Komarek, and Wolfhard Luck, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 936,279

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739844

Int. Cl.[2] C14C 3/06, 9/00

U.S. Cl. 8—94.26 6 Claims

1. In the chrome-tanning of animal skins and hides by pretanning the pickled pelts with chromium(III)salts and acid-binding agents and thereafter full tanning, the improvement which comprises effecting full tanning with the reaction product of at least one of formic acid and a formate with a basic chromium (III) sulphate, at least 2 moles of formate plus formic acid being used per mole of Cr_2O_3 for full tanning, the total input of chromium oxide being from about 1.0 to 1.8%, based on the weight of the pelts, and tanning being carried out with a liquor volume of at most 100%, based on the weight of the pelts, up to a final pH-value of at least 4.0.

4,211,530

TEST-KIT AND METHOD FOR THE ESTIMATION OF LP-X

Bastiaan C. Goverde; Peter S. L. Janssen, both of Oss, Netherlands, and Gerhard M. Kostner, Graz, Austria, assignors to Akzo N.V., Arnhem, Netherlands

Filed Feb. 8, 1978, Ser. No. 876,133

Claims priority, application Netherlands, Feb. 18, 1977, 7701800

Int. Cl.[2] G01N 33/16

U.S. Cl. 23—230 B 10 Claims

1. A method for the demonstration and determination of the lipoprotein LP-X in serum, comprising

initially removing the interfering apo-B-containing lipoproteins from serum,

subsequently adding to the remaining serum substances that reduce the solubility of lipoproteins, thus forming a suspension of LP-X, and

measuring and determining the amount of LP-X by visual or photo-optical methods.

4,211,531

COLORIMETRIC CHOLESTEROL ASSAY

Manik L. Das, Ballwin, Mo., assignor to Sigma Chemical Company, St. Louis, Mo.

Filed Apr. 20, 1979, Ser. No. 31,773

Int. Cl.[2] G01N 33/16, 21/22, 31/02

U.S. Cl. 23—230 B 11 Claims

1. In a method of determining cholesterol in a biological sample comprising a precipitation step for precipitating protein in the sample, a color forming step for forming in the resulting supernatant a color proportional to the concentration of at least one form of cholesterol in the sample, and a step of determining the depth of color formed, the improvement wherein said precipitation step is carried out by means of a reagent comprising colorimetric amounts of propionic acid and ferric ion.

11. A reagent kit for determination of total cholesterol, said reagent kit comprising a first container containing a colorimetric amount of ferric chloride and propionic acid and a second container containing a reagent comprising colorimetric amount of propionic acid and sulfuric acid.

4,211,532

TEST COMPOSITION, METHOD AND A TEST STICK FOR DETECTION OF CHLORIDE ION IN COW'S MILK

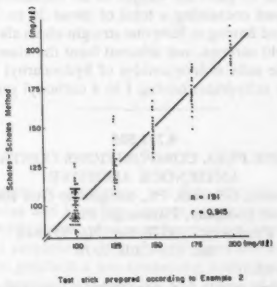
Shizen Tobari, Tachikawashi, and Mariko Nakano, Hokkaido, both of Japan, assignors to Toyo Roshi Kaisha Ltd., Tokyo, Japan

Filed Jul. 13, 1978, Ser. No. 924,376

Claims priority, application Japan, Oct. 27, 1977, 52-128167

Int. Cl.[2] G01N 33/04

U.S. Cl. 23—231 10 Claims



Test stick prepared according to Example 2

1. A composition for detecting chloride ion in cow milk, comprising a protected silver chromate colloidal substance, a surface active agent and a buffer agent having a pH value from 2 to 7.

4,211,533

METHOD OF HOT-BRIQUETTING MIXTURES OF COAL AND COKE

Gerd Nashan, Oberhausen; Josef Langhoff, Dinslaken; Joachim Lehmann, Essen-Haarzopf; Kurt Kleisa, Hattingen, and Dieter Makrutzki, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Ruhrkohle AG, both of Essen, Fed. Rep. of Germany

Filed Apr. 10, 1978, Ser. No. 894,846

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715977

Int. Cl.[2] C10L *5/00*

U.S. Cl. 44—10 C **7 Claims**

1. In a method of making briquettes in which coke and coking coal are admixed to form a briquetting mixture having a temperature in the range between about 400°–500° C., the improvement wherein the coke temperature is adjusted, prior to mixing of the coke with the coking coal, to a temperature level which will, upon mixing of the coke with the coking coal, result in the mixture having a temperature within ±5% of a predetermined briquetting temperature lying within said range.

4,211,534

COMBINATION OF ETHYLENE POLYMER, POLYMER HAVING ALKYL SIDE CHAINS, AND NITROGEN CONTAINING COMPOUND TO IMPROVE COLD FLOW PROPERTIES OF DISTILLATE FUEL OILS

Nicholas Feldman, Woodbridge, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 909,441, May 25, 1978, abandoned. This application Aug. 30, 1978, Ser. No. 938,050

Int. Cl.[2] C10L *1/22*

U.S. Cl. 44—62 **19 Claims**

1. A wax-containing petroleum fuel oil comprising a major proportion of a distillate oil boiling in the range of 120° to 500° C., which fuel oil has been improved in its low temperature flow properties, containing in the range of about 0.001 to 0.5 wt. %, based on the weight of the total composition, of a flow improving combination of:

(A) one part by weight of an oil-soluble ethylene backbone distillate flow improving polymer having a number average molecular weight in the range of about 500 to 50,000;

(B) 0.1 to 10 parts by weight of a second oil-soluble polymer of monomers other than ethylene, having a molecular weight in the range of about 1000 to 200,000 wherein at least 10% by weight of said polymer is in the form of straight chain alkyl groups having 6 to 30 carbon atoms, said polymer comprising unsaturated ester, or unsaturated ester and olefin, monomer moieties, said moieties comprising a major weight proportion of said polymer; and

(C) 0.01 to 10 parts by weight of an oil soluble nitrogen compound containing a total of about 30 to 300 carbon atoms and having at least one straight chain alkyl segment of 8 to 40 carbons, and selected from the class consisting of amine salts and/or amides of hydrocarbyl carboxylic acids or anhydrides having 1 to 4 carbonyl groups.

4,211,535

GASOLINE FUEL COMPOSITIONS CONTAINING ANTIKNOCK ADDITIVE

Robert J. Hartle, Gibsonia, Pa., assignor to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Aug. 7, 1978, Ser. No. 931,612

Int. Cl.[2] C10L *1/18*

U.S. Cl. 44—68 **6 Claims**

1. A gasoline motor fuel composition comprising a major amount of gasoline and a small amount, sufficient to improve the antiknock characteristics of the gasoline, of a free β-diketone and a chelate of cerium(IV),

a. said free β-diketone represented by the formula $R_1CO—CH_2—CO—R_2$ where R_1 and R_2 are alkyl radicals with at least one being branched, each having from 1 to about 8 carbon atoms and having a total of at least 5 carbon atoms, and

b. said chelate of cerium(IV) is the tetrakis chelate with a β-diketone represented by the formula $R_3—CO—CH_2—CO—R_4$ where R_3 and R_4 are alkyl, aralkyl or cycloalkyl radicals, each containing from 1 to 12 carbon atoms and the sum of the carbon atoms in said radicals is 5 to about 20.

4,211,536

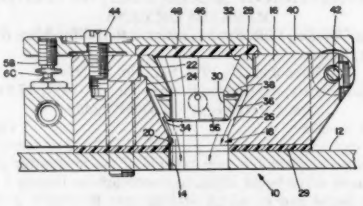
POKE HOLE CLOSURE APPARATUS

Wallace Hamilton, Chagrin Falls, Ohio, assignor to McDowell-Wellman Company, Cleveland, Ohio

Filed Oct. 16, 1978, Ser. No. 951,337

Int. Cl.[2] C10J *3/72*

U.S. Cl. 48—87 **2 Claims**



1. A poke hole closure assembly for a gas producer to minimize the escape of noxious or volatile gas from the producer during a poking operation, comprising closure means for a poke hole of a gas producer, said closure means comprising a block having an aperture therethrough, means attaching said block to a gas producer so that said aperture is in substantial alignment with a poke hole, a closure plate hinged to said block to block said aperture and poke hole during normal operating conditions and being openable to enable a poker to be inserted therethrough, and nozzle means responsive to the opening of said closure means to direct an inert gas into said poke hole, said nozzle means including passage means communicating with the interior of said aperture for conducting said inert gas to said aperture, said nozzle further including a hollow, conical insert mounted in said aperture, said insert having an opening therethrough to permit passage of said poker and having an outer conical wall spaced from an inner conical wall of said aperture, said passage means opening through said inner conical wall and into the space between said conical walls so that the inert gas will be directed downwardly and radially into said poke hole to block the outward passage of noxious or volatile gas from said poke hole when said closure plate is opened, means to prevent the entrainment of air in the downwardly and inwardly directed flow of inert gases comprising a plurality of ports extending through said insert from the space between said inner and outer conical walls to the opening through the insert to provide a blanket of inert gas which is sucked into the poke hole; to thereby prevent the entrainment of air.

4,211,537

HYDROGEN SUPPLY METHOD

Robert J. Teitel, 13944 Boquita Heights, Del Mar, Calif. 92014

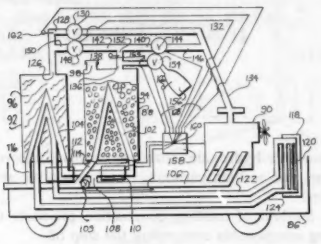
Filed Jul. 24, 1978, Ser. No. 927,203

Int. Cl.[2] F17D *3/01*

U.S. Cl. 48—191 **7 Claims**

1. A process of supplying hydrogen from a hydrogen storage system including a storage means for containing hydrogen; said storage means including at least one hydrogen withdrawal conduit connected to said storage means for discharging said hydrogen from said storage means, a first compartment means, a second compartment means and a connecting means for

connecting said first compartment means to said second compartment means, a microcavity hydrogen storage means located in said first compartment, said microcavity hydrogen storage means including a porous structure having a plurality of microcavities defined by closed pores surrounded by hydrogen permeable walls, said microcavities containing hydrogen under pressure encapsulated within the interior of their walls, said microcavities upon being heated capable of releasing the pressurized hydrogen encapsulated within their interiors; a quantity of a composition capable of forming at least one metal hydride when exposed to hydrogen located in said second compartment means, said metal hydride capable of releasing hydrogen when heated and absorbing hydrogen when cooled in the presence of hydrogen which comprises:



heating said microcavities to cause said pressurized hydrogen to diffuse through said permeable walls from the interior of said microcavities to the exterior of said microcavities;

allowing hydrogen to transfer between said first and said second compartments through said connecting means;

regulating the temperature of said composition in accordance with the pressure of said hydrogen in said second compartment means so that the pressure of hydrogen within said second compartment means remains substantially constant;

withdrawing hydrogen through said hydrogen withdrawal conduit for use external said hydrogen storage system.

4,211,538

PROCESS FOR THE PRODUCTION OF AN INTERMEDIATE BTU GAS

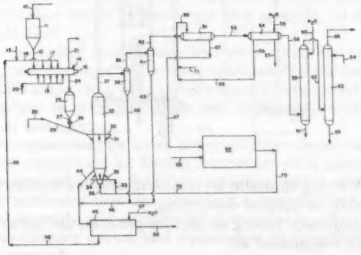
James M. Eakman; Nicholas C. Nahas, both of Baytown, and Charles A. Euker, Jr., Houston, all of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 771,504, Feb. 25, 1977, Pat. No. 4,118,204. This application Jun. 28, 1978, Ser. No. 920,045

The portion of the term of this patent subsequent to Oct. 3, 1995 has been disclaimed.

Int. Cl.² C10J *3/54*

U.S. Cl. 48—197 R **10 Claims**



1. A process for the production of an intermediate Btu product gas from a carbonaceous feed material and steam which comprises:

(a) reacting said steam with said carbonaceous feed material in a reaction zone at a reaction temperature between about 1000° F. and about 1500° F. and at a reaction pressure in excess of about 100 psia, in the presence of a carbon-alkali metal catalyst and sufficient added hydrogen and carbon monoxide to provide substantially equilibrium quantities of hydrogen and carbon monoxide in said reaction zone at said reaction temperature and said reaction pressure;

(b) withdrawing from said reaction zone an effluent gas containing substantially equilibrium quantities, at said reaction temperature and pressure, of methane, carbon dioxide, steam, hydrogen and carbon monoxide;

(c) recovering a portion of said effluent gas as said intermediate Btu product gas;

(d) contacting at least a portion of the remainder of said effluent gas with steam in a steam reforming zone under conditions such that the methane in said effluent gas reacts with said steam to produce hydrogen and carbon monoxide; and

(e) passing the effluent from said steam reforming zone into said reaction zone without substantial cooling, thereby supplying said added hydrogen and carbon monoxide required in said reaction zone and wherein said reforming zone is operated at conditions such that the heat content of said effluent from said steam reforming zone is sufficient to supply substantially all of the heat needed to preheat said carbonaceous feed material to said reaction temperature.

4,211,539

PRODUCING PURE GAS OF HIGH CALORIFIC VALUE FROM GASIFICATION OF SOLID FUEL

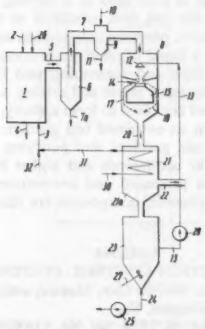
Herbert Bierbach, Frankfurt am Main; Rudolf Kohlen, Wehrheim, and Carl Hafke, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 790,368, Apr. 25, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,508

Claims priority, application Fed. Rep. of Germany, May 26, 1976, 2623489

Int. Cl.² C10J *3/16*

U.S. Cl. 48—197 R **6 Claims**



1. A process of producing and then using a gas of high calorific value and low dust content comprising contacting a solid fuel with water vapor and free oxygen in a gasification reactor at a pressure of about 5 to 150 bars and a temperature sufficient to produce a gas containing hydrogen and carbon monoxide, containing at least about 8 grams of dust per standard cubic meter and having a temperature of about 350° to 800° C., subjecting the gas to a dry coarse purification to reduce the solids content thereof, intensely scrubbing the gas at about 150° to 350° C. with a scrubbing liquid predominantly comprising hydrocarbons and including less than 2% of water by weight, after said dry coarse purification and before said

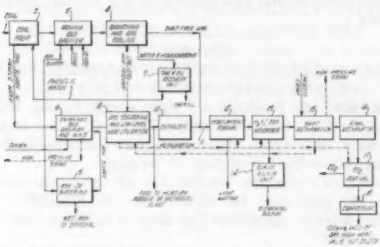
scrubbing spraying water into the gas thereby to cool it to below 350° C. so as to prevent cracking of constituents of said scrubbing liquid, at least about 70% of said hydrocarbons of the scrubbing liquid having a boiling point above about 350° C., said scrubbing liquid being supplied to the scrubbing stage at a rate of about 0.5 to 6 liters per standard cubic meter of raw gas, withdrawing a purified gas with a solids content not exceeding 10 milligrams per standard cubic meter and having an enhanced calorific value and employing it as a fuel for the operation of at least one turbine, withdrawing used scrubbing liquid from said intense scrubbing stage and cooling it by indirect heat exchange in a cooling zone, separating the liquid from said cooling zone in a tar separator into a high-solids heavy phase and a low solids lighter phase, and using said lighter phase as said scrubbing liquid in the intense scrubbing stage.

4,211,540

PROCESS FOR THE MANUFACTURE OF FUEL GAS

David Netzer, Stafford, Tex., assignor to Fluor Corporation, Irvine, Calif.

Filed Dec. 29, 1978, Ser. No. 974,221
Int. Cl.[2] C10J *3/08, 3/16, 3/46*
U.S. Cl. 48—202 **8 Claims**



1. A process for the manufacture of fuel gas from coal which comprises sizing a coal feed to produce a first portion of larger particle sizes and a second portion of fine particles; gasifying (a) said first portion of coal feed in a moving bed slagging gasifier; quenching the gas thus produced to form a water phase comprising water, phenolic compounds, ammonia, CO_2, HCN, and H_2S and a liquid organic phase comprising tar, oil and naphtha; separating and recovering said liquid organic phase; separating the water phase and mixing it with (a) said second portion of said coal feed to form a slurry; gasifying the coal in said slurry in an entrained bed gasifier; blending the gases generated by said gasifiers, and purifying the blend by removing CO_2, sulfur compounds and higher hydrocarbons, whereby fuel gas is produced and environmentally unsafe byproducts such as phenolic compounds are eliminated.

4,211,541

POLLUTION CONTROL SYSTEM

Alberto C. Fernandez, Mexico City, Mexico, assignor to Harry W. O. Kinnard, Arlington, Va.

Filed Jun. 26, 1978, Ser. No. 919,521
Int. Cl.[2] B01D *47/12, 53/04*
U.S. Cl. 55—68 **6 Claims**

1. A method of treating combustion products to remove gaseous and solid polluting components comprising the steps in order of:

passing the combustion products through a screen to allow gases and particles of smaller size than mesh size to pass through the screen while retaining particles larger than mesh size in the combustion area, then

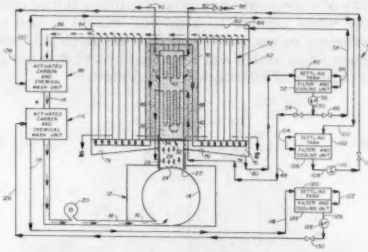
washing combustion products with steam, then

passing a mixture of steam and combustion products through granulated carbon, then

washing combustion products with an aqueous solution of potassium aluminum sulfate, aluminum sulfate, aluminum hydroxide, chlorine, and quicklime, and removing any precipitants, then

washing combustion products with an aqueous solution of kerosene and naphthalene and removing any precipitants, and then

washing combustion products with an aqueous solution of



aluminum hydroxide, aluminum sulfate, chlorine, quicklime, and sodium carbonate, and removing any precipitants.

4. A method of treating combustion products to remove polluting components comprising the step of:

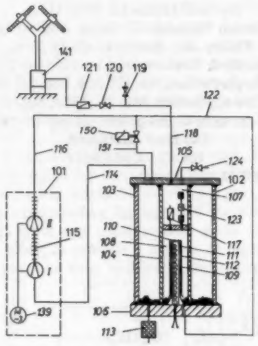
washing combustion products with an aqueous solution of potassium aluminum sulfate, aluminum sulfate, aluminum hydroxide, chlorine, and quicklime.

4,211,542

METHOD AND APPARATUS FOR PRODUCING DRY, COMPRESSED AIR FOR ELECTRICAL SWITCH GEAR

Wilhelm Kramer, Sandhausen, Fed. Rep. of Germany, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jan. 23, 1978, Ser. No. 871,339
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 2702767
Int. Cl.[2] B01D *53/04*
U.S. Cl. 55—179 **9 Claims**



1. A drying apparatus for removing moisture from air for use in electric switchgear comprising:

a compressor having an inlet for pre-dried air and an outlet for compressed air;

a housing including:

an outer annular cylindrical housing portion in fluid communication with the inlet of the compressor;

means disposed within said outer annular cylindrical housing portion to pre-dry at least atomspheric air;

an inner cylindrical housing portion in fluid communication with the outlet of the compressor;

heating means for heating the compressed air within said inner cylindrical housing portion to a temperature sufficient to render moisture within the air to a steam phase; and

means within said inner cylindrical housing portion to dry said heated compressed air.

4,211,543

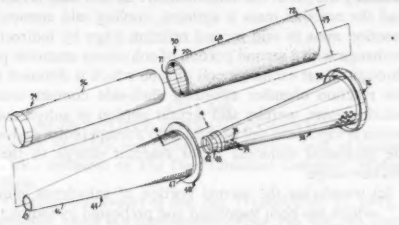
AIR CLEANER WITH REPLACEABLE FILTER ELEMENT

Joseph C. Tokar, Apple Valley, and Frank A. Janezich, Richfield, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Apr. 24, 1978, Ser. No. 898,906

Int. Cl.[2] B01D *46/02, 46/52*

U.S. Cl. 55—485 **15 Claims**



1. An improved filter element assembly for use in an air cleaning device having a filter body which defines a filter chamber, said filter element assembly being releasably contained in said filter body, wherein said filter element assembly comprises:

(a) an elongated perforated liner assembly, said liner assembly being made from a material which is sufficiently durable to enable said liner assembly to be reused during successive air cleaning operations over the life of the air cleaning device;

(b) a disposable and elongated filter element which includes a filter medium having a plurality of pleats, said filter medium being made from a material which is substantially porous to air and substantially nonporous to predetermined particulate matter suspended in the air, whereby said filter medium removes the particulate matter from the air;

(c) a porous safety sleeve assembly positioned between said liner assembly and said filter element;

(d) locking means for releasably coupling said filter element to said liner assembly with said filter medium surrounding said liner assembly in a face-to-face relationship, whereby said filter element may be detached from said liner assembly when said filter medium becomes plugged with the particulate matter to allow said liner assembly to be reused; and

(e) an elongated porous outer liner surrounding and engaging said filter medium, wherein said outer liner is resilient and is shaped to apply a radially inward force to said filter medium to press said pleats into engagement with said liner assembly.

11. A replacement kit for an improved filter element assembly, said replacement kit having component parts capable of being assembled in the field for association with a conically shaped perforated liner for providing a reconditioned filter element assembly, said assembly being received in a filter body of an air cleaning device, said replacement kit comprising the combination of:

(a) a filter element, said filter element having a pleated filter medium which is integrally attached at one end to an end cap, said end cap having means for releasably locking said filter element to one end of said liner, said filter medium and said end cap having an interior bore which receives said liner therein;

(b) a safety sleeve assembly which comprises a porous safety filter having a gasket at one end, said safety filter being suitable for being positioned between said filter element and said liner when said filter element is releasably coupled to said liner, said gasket being received between one end of said pleated filter medium and one end of said liner to seal said one end of said filter medium relative to said one end of said liner; and

(c) a resilient and porous outer liner which is to be received around said pleated filter medium, said outer liner being configured to apply inward pressure on said pleats of said filter medium to force said pleats into contact with said liner.

4,211,544

COMPRESSION OF NITROGEN OVERHEAD FROM HIGH PRESSURE COLUMN IN TRACTIONATION OF AIR

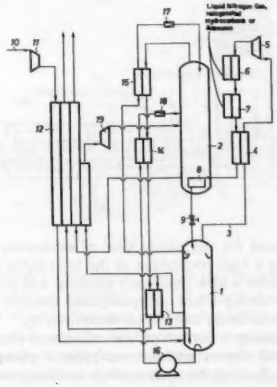
Helmut Springmann, Geretsried, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 897,073

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717107

Int. Cl.[2] F25J *3/04*

U.S. Cl. 62—30 **7 Claims**

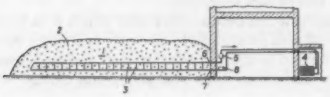


1. In a process for the low-temperature fractionation of air by two-stage rectification comprising separate high and low pressure rectification columns, wherein nitrogen is withdrawn in the gaseous phase from the upper portion of the high-pressure column, warmed, compressed, cooled, liquefied, pressure reduced, and recycled as reflux into the upper portion of the high-pressure column, the improvement which comprises withdrawing the gaseous nitrogen from the high pressure column and without heat exchange with the liquid bottoms of the low pressure column, compressing the gaseous nitrogen, and then liquefying the compressed nitrogen in heat exchange with evaporating oxygen in the lower portion of the low-pressure column.

4,211,545
METHOD AND APPARATUS FOR PREPARING HIGH GRADE FERTILIZER

Gernot Graefe, Bergstrasse 6, A-7082 Donnerskirchen, Austria

Filed Jul. 5, 1977, Ser. No. 812,856
Claims priority, application Austria, Jul. 7, 1976, 4977/76; May 18, 1977, 3581/77
Int. Cl.[2] C05F 11/08, 5/00, 11/00
U.S. Cl. 71—9 11 Claims

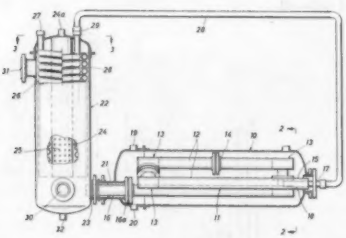


1. A process for the preparation of a high grade fertilizer from organic materials comprising storing pressing residues obtained from wine and fruit juice production temporarily under anaerobic conditions and then loosely mixing the residues with air to produce a mass whereby intense aerobic degradation takes place to produce heat, carbon dioxide and moisture and a finely divided high quality fertilizer and wherein any seeds and pits are separated from the decayed residues and the separated seeds and pits are ground and then subjected to aerobic decay.

4,211,546
PROCESS FOR PREPARATION OF AMMONIUM POLYPHOSPHATE

William C. Jensen, Concord, Calif., assignor to Western Farm Services Inc., Walnut Creek, Calif.

Filed Oct. 5, 1978, Ser. No. 948,722
Int. Cl.[2] C05B 7/00
U.S. Cl. 71—34 5 Claims



1. A process for the production of ammonium polyphosphate having a high proportion of the total P_2O_5 in the polyphosphate form which comprises reacting wet-process phosphoric acid having a low polyphosphate content with anhydrous ammonia under anhydrous conditions by:

(a) introducing a portion of the anhydrous ammonia, as a preheated vapor, into the wet-process phosphoric acid thereby forming an ammoniation reaction mass in a first reaction stage comprising a reaction tube or pipe contained in and completely enclosed by a tubular jacket, said reaction tube being positioned in the tubular jacket such that its inlet end terminates inside the jacket, and its outlet end extends through and is affixed to the jacket, said anhydrous ammonia being introduced into the reaction tube downstream from its inlet end by means of an injection tube which extends through the tubular jacket and is disposed along the same longitudinal axis as the reaction tube, said injection tube having a smaller diameter than the reaction tube end extending into the reaction tube thereby forming an annular opening to the jacket between the injection tube and the reaction tube, said wet-process phosphoric acid being introduced without external preheating into the tubular jacket at a point remote from the inlet end of the reaction tube such that it contacts a sufficient portion of the external surface of the reaction tube to be preheated by indirect heat exchange with the ammoniation reaction mass and flows, in preheated form, through the annular opening between the ammonia injection tube and the reaction tube into the reaction tube,

(b) passing the ammoniation reaction mass from the first reaction stage into a second reaction stage comprising a vertically oriented reaction chamber, said ammoniation mass being introduced into the lower portion of said reaction chamber, and adding to said ammoniation reaction mass sufficient anhydrous ammonia in a liquid or vapor form to bring the total nitrogen content of the amnoniation reaction mass to the final desired nitrogen to phosphate ratio, said anhydrous ammonia being introduced into the ammoniation reaction mass by means of a sparger extending from the top of the vertically oriented reaction chamber down into the ammoniation reaction mass whereby the pH of the ammoniation reaction mass is increased and the reaction mass is agitated, cooling said ammoniation reaction mass in said second reaction stage by indirect heat exchange with a second portion of anhydrous ammonia passed through a heat exchange coil or tube which is disposed inside the reaction chamber affording shell-side contact with the reaction mass, wereby said second portion of anhydrous ammonia is vaporized and preheated to a temperature desired for the preheated ammonia vapor reactant charge to the first reaction stage;

(c) transfering the second portion of anhydrous ammonia which has been vaporized and preheated by indirect heat transfer in the second reaction stage to the ammonia injection tube of the first reaction stage thereby providing substantially all of the preheated ammonia reactant required for that reaction stage;

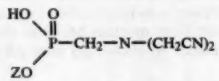
(d) recycling a portion of the reaction product, which has been cooled by outside means, to the lower portion of the second stage reaction chamber to control the temperature of the ammoniation mass in the chamber and the temperature of the second portion of anhydrous ammonia.

4,211,547
N-PHOSPHONOMETHYLIMINODIACETONITRILE AND CERTAIN DERIVATIVES THEREOF

Van R. Gaertner, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1978, Ser. No. 972,547
Int. Cl.[2] C07C 121/43; A01N 9/36
U.S. Cl. 71—86 9 Claims

1. A compound of the formula



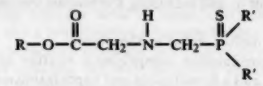
wherein Z is hydrogen or a herbicidally acceptable cation.

4,211,548
ESTERS OF N-PHOSPHINOTHIOYLMETHYLGLYCINE AND HERBICIDAL METHOD

John E. Franz, Crestwood, and Robert J. Kaufman, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1978, Ser. No. 974,184
Int. Cl.[2] C07F 9/40; A01N 9/36
U.S. Cl. 71—87 36 Claims

1. A compound of the formula



wherein R is a member of the class consisting of alkyl of from 1 to 10 carbon atoms, chloroalkyl of from 1 to 4 carbon atoms and from 1 to 3 chlorine atoms and alkoxyalkyl groups containing from 3 to 7 carbon atoms and each R′ is a member of the class consisting of thioalkyl of from 1 to 6 carbon atoms, phenoxy, phenylthio and said phenoxy and phenylthio groups substituted with from 1 to 2 members of the class consisting of halo, lower alkyl of from 1 to 4 carbon atoms and lower alkoxy of from 1 to 4 carbon atoms and the strong acid salts thereof.

25. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a compound of claim 1.

4,211,549

SUBSTITUTED OXIRANE COMPOUNDS

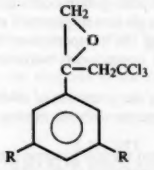
Lowell D. Markley, and Elizabeth J. Norton, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 771,055, Feb. 27, 1977, abandoned, which is a continuation of Ser. No. 638,740, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 466,567, May 3, 1974, abandoned. This application Jul. 17, 1978, Ser. No. 925,487

Int. Cl.² A01N 9/00

U.S. Cl. 71—88 **15 Claims**

1. A compound of the formula



(I)

wherein each R group represents bromo, chloro or methyl.

4,211,550

USE OF ISOUREA DERIVATIVES AND TRIAZINE DERIVATIVES IN COMBINATION WITH GIBBERELLINS AS PLANT GROWTH REGULATORS

Kozo Oyamada; Takashi Matsui; Junzo Tobitsuka, all of Hiromachi; Yoshio Yamazaki, and Masami Ogawa, both of Yasumachi, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 703,963, Jul. 9, 1976, abandoned. This application Mar. 28, 1978, Ser. No. 891,027

Claims priority, application Japan, Jul. 16, 1975, 50/87030; Sep. 5, 1975, 50/107823; Sep. 22, 1975, 50/114473

Int. Cl.² A01N 9/12, 9/22

U.S. Cl. 71—89 **2 Claims**

1. A method for stimulating the growth of plants comprising administering a growth stimulating effective amount of a mixture of a gibberellin and 4-ethoxy-1,3-dihydro-1-(p-tolyl)-1,3,5-triazine-2,6-dione in an amount from 0.1 to 100 parts by weight of gibberellin.

4,211,551

HERBICIDE

Kurt Thiele; Quazi Ahmed, both of Zofingen; Walter Schären, Vordemwald, and Jacques Meyer, Zofingen, all of Switzerland, assignors to Siegfried AG, Zofingen, Switzerland

Filed Nov. 10, 1977, Ser. No. 850,468

Claims priority, application Switzerland, Nov. 15, 1976, 014340/76

Int. Cl.² A01N 9/24

U.S. Cl. 71—116 **1 Claim**

1. A method for destroying dicotyledonous weeds in a crop area comprising treating said crop area with an effective amount of at least one active ingredient selected from the group consisting of 4-(4′-chlorobenzyl)-phenoxy acetic acid and the agriculturally acceptable salts of said acid with a base selected from the group consisting of inorganic and organic bases.

4,211,552

METHOD FOR PROCESSING MOLTEN SLAG

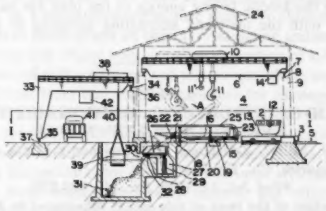
Yoshio Tanaka, Fukuoka; Tatsuo Shibata, Kitakyushu; Tatsuo Matsuo, Oita; Tadao Takashima, Oita, and Sankichi Hori, Oita, all of Japan, assignors to IRI-E Kosan Corporation, Fukuoka and Nippon Steel Corporation, Tokyo, both of, Japan

Division of Ser. No. 693,443, Jun. 7, 1976, Pat. No. 4,082,252. This application Oct. 31, 1977, Ser. No. 846,865

Claims priority, application Japan, Jun. 13, 1975, 50-72217; May 11, 1976, 51-54168

Int. Cl.² C21B 3/04

U.S. Cl. 75—24 **13 Claims**

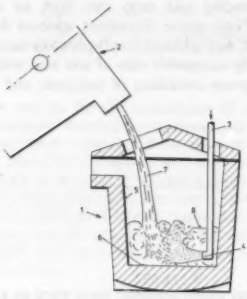


1. A method for processing molten slag from a steel making plant to produce solidified slag of practical use consisting essentially of spreading said molten slag which is discharged from said steel making plant into a substantially level disposition on a substantially horizontal surface of a tiltably mounted slag receiving means which is disposed in a substantially horizontal position, air cooling said molten slag while in said level disposition on said slag receiving means until the slag is substantially solidified, spraying water onto said slag while in said level disposition to effect further cooling and solidification of said slag on said slag receiving means while also preventing adhesion of the slag to said slag receiving means, disposing said solidified and cooled slag in a generally inclined disposition and sliding downwardly said solidified and cooled slag by tilting said slag receiving means from said horizontal position, discharging downwardly said sliding slag into a slag bucket means, submerging said slag in a cooling water pit to effect quenching of the slag, and transferring said quenched slag from said cooling water pit, whereby said solidified and quenched slag is suitable for practical use.

4,211,553
METHOD OF REFINING OF MELTS BY MEANS OF A PULVEROUS SOLID MATERIAL AND/OR A GAS

Matti E. Honkaniemi, Tornio; Helge J. Krogerus, Pori; Launo L. Lilja, Pori; Juho K. Mäkinen, Pori; John H. Relander, Tornio, and Frans H. Tuovinen, Ulvila, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Jun. 9, 1978, Ser. No. 914,216
Claims priority, application Finland, Jun. 21, 1977, 771947
Int. Cl.[2] C22B *9/00*
U.S. Cl. 75—53 6 Claims

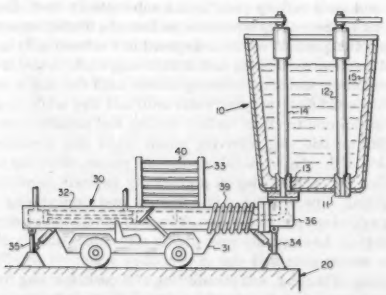


1. A method for refining a melt by means of a reagent consisting essentially of a solid pulverous material and a gas, employing a reactor having side walls and a bottom comprising pouring the melt into the reactor close to one side wall thereof and simultaneously injecting the reagent under the melt surface from a side of the reactor opposite to the one near which the melt is poured in a direction substantially parallel to the reactor bottom and thereby causing the flow of the injected reagent and the flow of the melt being poured to impinge against each other from substantially opposite directions in the reactor and utilizing the kinetic falling energy of the melt for mixing the reagent with the melt and alternating agitation of the melt surface.

4,211,554
METHOD OF INTRODUCING ADDITION AGENTS INTO A VESSEL OF MOLTEN METAL

Eldon D. Miller, Zelienople, Pa., assignor to Lava Crucible Refractories, Co., Pittsburgh, Pa.

Filed Jul. 12, 1978, Ser. No. 924,079
The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.
Int. Cl.[2] C22C *33/08*
U.S. Cl. 75—53 8 Claims



1. A method of treating molten metal with addition agents in a cup-shaped vessel having a bottom and side walls and lower portion adjacent to and including the bottom comprising steps of

introducing molten metal to the vessel,

heating a comsumption comprising a mixture of said addition agent and a nonalloying and vaporizable metal carrier to a temperature at which it may be extruded, and

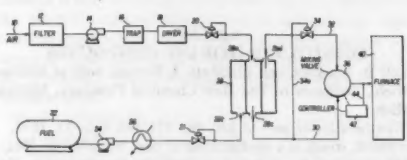
extruding the composition through a die into the molten metal in the lower portion of the vessel,

the temperature of said molten metal in the vessel being above the temperature at which the metal carrier is vaporizable.

4,211,555
METHOD OF CONTROLLING COMBUSTION IN A METAL MELTING FURNACE

Milton E. Berry, and Ronald L. Pariani, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Feb. 21, 1978, Ser. No. 879,034
Int. Cl.[2] C22B *15/00, 15/14*
U.S. Cl. 75—72 30 Claims



1. A method for preparing a combustible gaseous fuel mixture having a predetermined constant mass ratio of its component gases for combusting in a metallurgical melting furnace, said method comprising the steps of:

providing a first oxygen-containing gaseous fuel component having a given temperature and pressure;

providing a second hydrocarbon-containing gaseous fuel component having a given temperature and pressure;

substantially equalizing the temperatures of said first and second gaseous fuel components without mixing of said components;

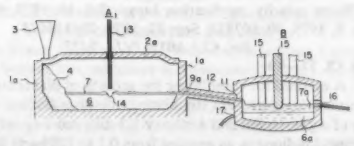
substantially equalizing the pressures of said first and second gaseous fuel components without mixing of said components; and

then mixing said first and second gaseous fuel components at a predetermined volume ratio to thereby obtain a combustible gaseous fuel mixture having a predetermined constant mass ratio of said components for combusting in a metallurgical melting furnace.

4,211,556
REVERBERATORY SMELTING OF NON-FERROUS METAL SULFIDE ORES

Takeshi Nagano, Tokyo; Motoo Goto, Kagawa, and Yoshiyuki Tsuji, Iwaki, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 971,834
Claims priority, application Japan, Dec. 30, 1977, 52-160076
Int. Cl.[2] C22B *15/04*
U.S. Cl. 75—74 12 Claims



1. A method for smelting a nonferrous metal sulfide ore, a

substantial portion of which is in a green state, to produce matte enriched with the metal by means of a series of furnaces comprising (A) a reverberatory furnace having a main structure having refractory sidewalls and transverse refractory end walls, a roof covering the main structure, burners at one end wall, feeding hoppers disposed in rows parallel to and near the sidewalls, at least one lance for introducing an oxygen-containing gas, a matte tapping port, a slag-and-matte overflow weir and means for conducting exhaust gas out of the furnace, and (B) a separation furnace combined with the reverberatory furnace through the slag-and-matte overflow weir and having inlet means, heating means, a matte tapping port and a slag tapping port, which method comprises the steps:

(a) in the reverberatory furnace, of

(i) charging the portion of the metal sulfide ore which is in the green state through the feeding hoppers into the furnace thereby to form ore piles as banks along the sidewalls,

(ii) burning a fuel by means of the burners thereby to melt the ore piles and to form a melt bath comprising a matte layer and a slag layer overlying the matte layer,

(iii) tapping a mixture of the slag and a portion of the matte out of the furnace through the slag-and-matte overflow weir thereby to maintain the slag layer within the furnace at a small thickness,

(iv) introducing the oxygen-containing gas through the lance into the melt bath thereby to oxidize the matte and to increase the content of the metal in the matte,

(v) tapping the remainder of the matte out of the furnace through the matte tapping port, and

(vi) discharging the exhaust gas formed by the combustion of the fuel and the oxidation of the sulfur through said means for conducting exhaust gas out of the furnace; and

(b) in the separation furnace, of

(i) introducing the mixture of slag and matte which has overflowed from the reverberatory furnace through the inlet means into the separation furnace,

(ii) separating, by settling, the mixture as it is heated thereby to form matte and slag layers,

(iii) tapping the matte out of the furnace through the matte tapping port, and

(iv) tapping the slag out of the furnace through the slag tapping port.

4,211,557

METHOD FOR PROCESSING LEAD STORAGE-BATTERY SCRAP

Anatoly P. Sychev, prospekt Lenina, 60, kv. 16; Georgy V. Kim, ulitsa Ushanova, 92, kv. 54; Valentin F. Larin, ulitsa Burova, 24, kv. 45; Galina D. Sidorova, prospekt Lenina, 19/1, kv. 52; Ivan G. Vikharev, ulitsa Belinskogo, 42, kv. 27; Vyacheslav P. Kuur, ulitsa Stakhanovskaya, 59, kv. 18, all of Vostochno-Kazakhstanskaya oblast, Ust-Kamenogorsk; Raul S. Akhmetov, Kurmangazy, 33, kv. 32, Alma-Ata; Georgy L. Moiseev, prospekt Lenina, 15, kv. 34, Leninogorsk; Vladimir I. Maslov, prospekt Gagarina, 38, kv. 66, Leninogorsk; Vladimir G. Kabachek, 3 Mikroraion, Leninogorsk, and Igor M. Cherednik, prospekt Lenina, 60, kv. 36, Vostochno-Kazakhstanskaya oblast, Ust-Kamenogorsk, all of U.S.S.R.

Filed Jun. 9, 1978, Ser. No. 914,300

Int. Cl.[2] C22B *13/00*

U.S. Cl. 75—77 **3 Claims**

1. A method for reprocessing lead storage-battery scrap, comprising: crushing said scrap; separating large-size metallic lead parts from said crushed scrap; separating chlorine-containing organic substances from said crushed scrap; grinding sulphate-oxide portion of said scrap, containing lead compounds, and battery cases formed of organic substances free from chlorine; subjecting the finely ground part of the scrap to smelting in an oxidizing atmosphere at a temperature of 1300° to 1500° C. until an oxidizing melt having a slag layer is obtained which contains lead oxide; reducing said lead oxide to metallic lead; and melting said large-size metallic lead parts separated after crushing separately or under the layer of slag in the oxidizing melt resultant from the smelting of the finely ground portion of the storage battery scrap.

4,211,558

COLOR PRINTING METHOD

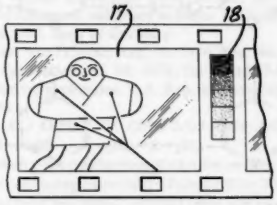
Masanobu Oguchi; Hidehiko Ishikawa; Haruyoshi Okuyama, all of Nihonbashi-Muro; Yasuo Uchida, Hachioji, and Kiyoshi Izawa, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Continuation of Ser. No. 701,018, Jun. 30, 1976, abandoned. This application May 22, 1978, Ser. No. 908,558

Claims priority, application Japan, Jul. 23, 1975, 50-90479

Int. Cl.[2] G03C *7/04*

U.S. Cl. 430—359 **2 Claims**



1. A method of printing a color positive print in which a negative to be printed on said color positive print is measured in color to make determination of an exposure time or amount of exposure, comprising the steps of effecting a photographic exposure on a predetermined picture area of a photosensitive color film to photograph an object; introducing ambient light illuminating said object into a small area portion of said color film outside of said predetermined picture area along an optical path different from that for said exposure for photographing said object and for an interval of time equal to interval of time of said exposure to photograph said object: developing said film to make visible said object and said small area portion; detecting the optical color density of said small area portion to measure three color components thereof; and effecting an exposure color correction on the basis of a ratio of said color components for printing of a color positive film.

4,211,559

PHOTOGRAPHIC PROCESSES AND COMPOSITIONS EMPLOYING THIOETHER CONTAINING SILVER HALIDE SOLVENTS

Richard B. Greenwald, Cambridge, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 728,127, Sep. 30, 1976, Pat. No. 4,126,459, which is a continuation-in-part of Ser. No. 686,587, May 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 563,306, Apr. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 463,263, Apr. 23, 1974, abandoned. This application Aug. 4, 1978, Ser. No. 930,996

The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.

Int. Cl.[2] G03C *5/54, 5/38, 1/48*

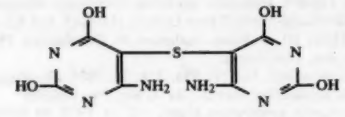
U.S. Cl. 430—211 **16 Claims**

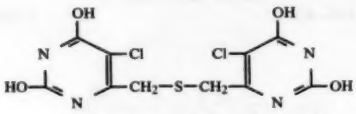
2. A photographic process comprising the steps of

(1) developing exposed silver halide of an imagewise ex-

posed photosensitive silver halide emulsion layer carried on a support with a silver halide developing agent in aqueous alkaline solution;

(2) reacting unreduced silver halide of said photosensitive emulsion with a silver halide solvent which forms a silver complex soluble and diffusible in said aqueous alkaline solution, said silver halide solvent being a compound selected from the group consisting of


(a)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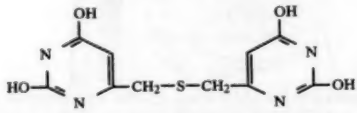
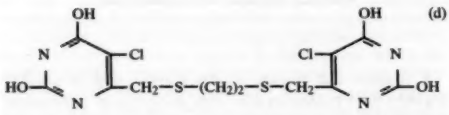
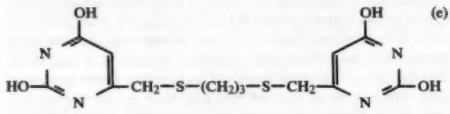
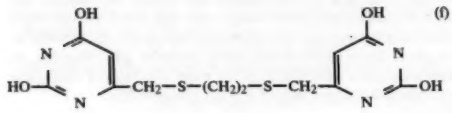
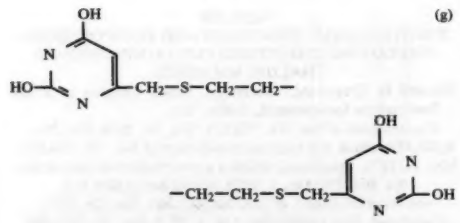

(c)


(d)


(e)


(f)

and


(g)

(3) transferring said complex silver salt to a superposed image-receiving layer; and

(4) reducing said transferred complex silver salt to provide a silver image.

4,211,560

PROCESS FOR PRODUCING IMAGE USING LAMINATED ORIENTED COVER FILM

Tadashi Taguchi, Kawasaki; Noboru Fujikawa, Tokyo; Mitsuo Kohno, Yokohama; Katsumi Yoshitake, Yokosuka, and Kunio Satake, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1978, Ser. No. 923,763

Claims priority, application Japan, Jul. 12, 1977, 52/82573; Dec. 26, 1977, 52/157091

Int. Cl.[2] **G03C** *5/00, 1/76*

U.S. Cl. 430—313 **27 Claims**

1. A process for producing an image, which comprises the steps of:

(1) applying to the surface of a substrate the surface of a photosensitive composition layer having adherence to the substrate, while the other surface of the photosensitive composition layer has laminated to it a substantially transparent oriented film support which is soluble or dispersible in a developer consisting essentially of a liquid capable of substantially dissolving or dispersing therein the areas of the layer other than those having a polymeric image produced by imagewise exposure in the step (2) below and capable of transmitting actinic rays, the application of the surface of the photosensitive composition layer to the surface of the substrate being effected after stripping of a protective film in case the protective film has been provided on the surface of the photosensitive composition layer remote from the film support;

(2) exposing the photosensitive composition layer, imagewise, to actinic radiation to form a polymeric image in the layer; and

(3) washing away with the developer the film support and the areas of the layer other than those having the polymeric image to form an image of a polymeric material on the substrate.

4,211,561

METHOD OF PRODUCING CROSS-LINKED POLYMERIC IMAGES

Louis Plambeck, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 8, 1978, Ser. No. 968,031

Int. Cl.[2] **G03C** *5/00, 7/00*

U.S. Cl. 430—306 **19 Claims**

1. A method for producing a cross-linked polymeric image on a substrate which comprises:

(a) imagewise exposing a photosensitive element to actinic radiation, said element comprising a substrate coated with a photosensitive layer containing dispersed silver halide in operative association with a continuous film-forming phase of hydrophilic polymeric coupler having a number average molecular weight of 5,000 to 100,000 and containing, per polymer chain, an average of at least two coupler groups capable of coupling with an oxidized p-aminodialkylaniline;

(b) swelling the polymeric coupler, and developing the exposed layer with a developing agent containing at least two functional groups capable of selectively reducing a silver halide latent image and, in their oxidized state, capable of coupling with the coupler groups of the swollen polymeric coupler, whereby the polymeric coupler is insolubilized by cross-linking, thereby forming an image; and

(c) removing the undeveloped, noncross-linked areas of the polymeric coupler by washing with a solvent in which the noncross-linked areas are soluble.

4,211,562

PHOTOGRAPHIC COMPOSITIONS WITH SILVER HALIDE SOLVENTS CONTAINING THIOETHER GROUPS

Richard B. Greenwald, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

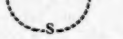
Division of Ser. No. 728,127, Sep. 30, 1976, Pat. No. 4,126,459, which is a continuation-in-part of Ser. No. 686,587, May 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 563,306, Apr. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 463,263, Apr. 23, 1974, abandoned. This application Aug. 4, 1978, Ser. No. 930,995

The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.

Int. Cl.² G03C 5/38

U.S. Cl. 430—456 20 Claims

1. A photographic processing composition comprising an aqueous alkaline processing solution including a silver halide developing agent and a silver halide solvent which forms a silver complex soluble and diffusible in said aqueous alkaline solution, said silverr halide solvent being a compound of the formula $M—[(X)_n—T]_m$ wherein M represents an aliphatic or aromatic moiety, Y—A, wherein A is an atom selected from O, N and C ionizable in said alkaline solution to the corresponding $O^{\ominus}$, $N^{\ominus}$ and $C^{\ominus}$ anion and Y represents the residue of said moiety; T is an —S— containing moiety excluding —SH and moieties that form $—S^{\ominus}$ in alkaline solution selected from R—S— or



wherein R is a monovalent hydrocarbon radical and R' represents the carbon atoms necessary to complete an aromatic or aliphatic ring; X represents a methylene group; n is a whole number from 0 to 5; and m is 1 or 2, said —S— of said R—S— and said

being positioned alpha, beta, gamma, delta, epsilon or zeta to said anion, said M being selected from a 2-amino-4-hydroxy-1,3,5triazine, a 1,2,3,4-tetrazole, a 1,2-disulfonylalkane, a sulfonamido derivative of an amino acid, a 2,4-dihydroxypyrimidine and a 4,6-dihydroxypyrimidine moiety.

4,211,563

AQUEOUS PHOTORESIST OF CASEIN AND N-METHYLOL ACRYLAMIDE

Abraham Goldman, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 877,481, Feb. 13, 1978, Pat. No. 4,158,566. This application Mar. 23, 1979, Ser. No. 23,391

Int. Cl.² G03C 1/68, 1/66

U.S. Cl. 430—286 4 Claims

1. A photoresist composition comprising an aqueous solution containing from about 4–12 percent by weight of the composition of casein, sodium borate in an amount of from about 8–20 percent by weight of the casein and so that the final pH is from about 6.7 to 7.3; from about 2–20 percent by weight of the casein of a dichromate salt and from about 5–30 percent by weight of the casein of N-methylol acrylamide.

4,211,564

CHEMICAL COPPER PLATING SOLUTION

Hitoshi Oka, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 904,322, May 9, 1978, abandoned. This application Apr. 18, 1979, Ser. No. 31,160

Int. Cl.² C23C 3/02

U.S. Cl. 106—1.23 5 Claims

1. In an aqueous chemical copper plating solution which consists essentially of a water soluble copper salt, a complex agent, a reducing agent, a hydroxide of alkali metal, surfactant, 2,2'-dipyridyl the improvement consisting of silver sulfide in an amount sufficient to provide a chemical copper plating solution having a better stability and higher plating speed and to provide a tougher plating film than conventional chemical copper plating solutions.

4,211,565

IRON OXIDE-BASED ANTI-CORROSION PIGMENTS

Franz Hund; Günter Linde, and Peter Kresse, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 713,480, Aug. 11, 1976, Pat. No. 4,140,538. This application Jul. 10, 1978, Ser. No. 923,517

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1975, 2537684

Int. Cl.² C09D 5/08; C09C 1/04, 1/24, 1/02

U.S. Cl. 106—14.05 8 Claims

1. A process for the production of chromium-free anti-corrosion pigment consisting essentially of about 30 to 70 mole % of an oxide of at least one metal selected from the group consisting of magnesium, calcium and zinc, and about 70 to 30 mole % of Fe_2O_3, which comprises calcining the corresponding metal oxides or starting materials which yield metal oxides upon calcination at a temperature of 400° to 600° C.

4,211,566

ANTIFOULING METHOD

Sumio Matsuda, Osaka, and Hajime Kudara, Shiga, both of Japan, assignors to Chugoku Marine Paints Ltd., Hiroshima, Japan

Continuation-in-part of Ser. No. 768,654, Feb. 14, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,366

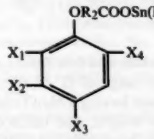
Int. Cl.² C09D 5/16

U.S. Cl. 106—16 9 Claims

1. In a method for preventing the adhesion of both marine animals and plants to the bottoms of ships comprising applying to the bottoms of ships a coating composition comprising

at least one coating resin, at least one solvent, a pigment and an antifouling agent; the improvement comprising, as said agent,

an antifouling effective amount of at least one organotin compound having the general formula [I]



[I]

wherein R_1 is an alkyl group having from one to eight carbon atoms or an aryl group having from six to eight carbon atoms, R_2 is an alkylene group having from one to four carbon atoms, and each of X_1, X_2, X_3 and X_4 is a component selected from the group of hydrogen, bromine, chlorine, iodine and methyl radical; provided that at least one of X_1, X_2, X_3 and X_4 is bromine, chlorine or iodine.

4,211,567
PROCESS FOR THE MANUFACTURE OF REFRACTORY CERAMIC PRODUCTS

Werner Dittrich, Herten; Walter Josten, Rheinfelden; Heinz Nestler, Niederkassel, and Friedhelm Schnippering, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 760,060, Jan. 17, 1977, which is a continuation of Ser. No. 326,624, Jan. 26, 1973, abandoned. This application Jun. 22, 1978, Ser. No. 919,334

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1972, 2204531

Int. Cl.[2] **B28B** *7/34*

U.S. Cl. 106—38.35 **10 Claims**

1. In a process for the manufacture of a ceramic mold comprising the steps of coating a model with a ceramic molding composition, shaping said composition about said model, hardening said composition removing the model and firing the resulting mold; the improvement comprising a ceramic molding composition, substantially free of silica or siliceous materials consisting essentially of:

(1) a refractory metal oxide; and

(2) a non-silicious binding agent which is liquid at room temperature, said binding agent consisting essentially of:

(A) an uncondensed liquid metal alcoholate of aluminum or a metal of the Fourth Sub-Group of the Periodic System, and

(B) a liquid polyvalent alcohol, in an amount between 2 and 25% by weight of the metal alcoholate and in such amount that when in admixture with said metal alcoholate precipitation of solids does not occur.

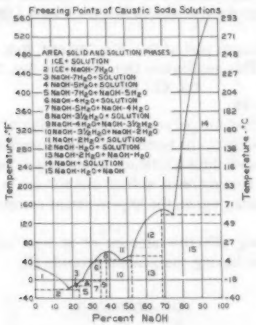
4,211,568
STORABLE GLASS BATCH COMPOSITION

Douglas H. Davis, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 476,647, Jun. 5, 1974, abandoned. This application Feb. 13, 1978, Ser. No. 877,538

Int. Cl.[2] **C03B** *1/00*

U.S. Cl. 106—52 **10 Claims**



1. A glass batch that is storable and free-flowing at a temperature within the temperature range of 12° C. to 65° C. for use in making soda-lime-silica glass having a Na_2O content of from 10 percent to 20 percent by weight, said batch comprising a moist, uniform, unpelletized, homogeneous mixture of silica source material, alkaline earth metal oxide source material and Na_2O source material wherein an aqueous sodium hydroxide solution is used as a Na_2O source material to provide at least 50 percent of the Na_2O requirement of the batch, said aqueous sodium hydroxide containing a percent by weight of NaOH as in FIG. 1, Region 12 and consisting of a solid phase having the composition $NaOH.H_2O$ and a solution phase at the temperature within said range at which the batch is stored, said batch having a bulk density of from 55 to 70 pounds per cubic foot.

6. In a process for preparing a storable, free-flowing glass batch for use in making soda-lime-silica glass having a Na_2O content of from 10 percent to 20 percent by weight comprising uniformaly mixing a silica source material, an alkaline earth metal oxide source material, and a Na_2O source material wherein sodium hydroxide is used as a Na_2O source material, the improvement comprising using an aqueous sodium hydroxide solution containing a percent by weight of NaOH as in FIG. 1, Region 12 and consisting of a solid phase having the composition $NaOH.H_2O$ and a solution phase at a temperature within the range of 12° C. to 65° C., and mixing sufficient of said sodium hydroxide solution with the other constituents of the batch, said aqueous sodium hydroxide being at a temperature above its liquidus point during mixing, to provide a batch having a bulk density of from 55 to 70 pounds per cubic foot and having at least 50 percent of its Na_2O requirement provided by sodium hydroxide and maintaining the moist, uniform, unpelletized, homogeneous batch at a storage temperature below the liquidus point of the sodium hydroxide solution whereat the aqueous sodium hydroxide in the batch will consist of said solid and solution phases.

4,211,569
HIGH INDEX OPHTHALMIC GLASSES

George B. Hares, and David L. Morse, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 9, 1979, Ser. No. 19,247

Int. Cl.[2] **C03C** *3/10, 3/30, 3/08*

U.S. Cl. 106—53 **6 Claims**

1. An ophthalmic glass having a refractive index between about 1.58–1.71, a softening point between 620°–645° C., a strain point between 445°–480° C., a coefficient of thermal expansion (0°–300° C.) between $61.3–65.6\times10^{-7}$/°C., and a weight loss of no more than 0.03 mg/cm^2 with no visible surface imperfection after immersion into a 10% by weight aqueous solution of HCl for 10 minutes at 25° C., said glass consisting essentially, in weight percent on the oxide basis, of 0–2% Li_2O, 0–3% Na_2O, 1–4% Li_2O+Na_2O, 4–9% BaO, 25–50% PbO, 4–8% B_2O_3, 4–7% Al_2O_3, 30–50% SiO_2, and 0.5–3% TiO_2, the sum of those constituents constituting at least 95% by weight of the total composition.

4,211,570
METHOD OF MANUFACTURING BETA ALKALINE ALUMINA PARTS

Gerard Desplanches, la Poitevine, and Jacques Leboucq, Saint-Genevieve-des-Bois, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Mar. 22, 1979, Ser. No. 22,768

Claims priority, application France, Mar. 31, 1978, 78 09498; Jan. 29, 1979, 79 02200

Int. Cl.[2] **C04B** *35/02, 35/10*

U.S. Cl. 106—65 **13 Claims**

1. In a method of manufacturing beta sodium alumina parts in which the following successive steps are carried out:

A. alumina powder and an alkaline carbonate powder are intimately mixed together in quantities such that a predetermined ratio Al_2O_3/Na_2O is obtained;

B. said intimate mixture is heated in an open crucible;

C. said mixture is allowed to cool freely;

D. the powder thus obtained is crushed;

E. said parts are shaped; and

F. said parts are sintered; said parts being disposed for this purpose in a sintering chamber made of a refractory material with at least a portion of the inside of the chamber being constituted so as to generate an atmosphere rich in sodium in the immediate vicinity of the parts during sintering, the improvement wherein said chamber is at least partially made of a refractory material which consists essentially of a mixture of three ingredients, namely beta

alumina fire clay obtained by melting and crushing into grains with a grain size of about 0.5 mm, beta alumina cement or binding agent obtained from an alpha alumina and sodium carbonate mixture by reaction in the solid state and at a temperature of about 1200° C., such a cement having a grain size of about 10 microns and lastly a sodium salt, the respective proportions by weight of these three ingredients being such that during sintering said chamber generates an atmosphere rich in sodium in the immediate vicinity of the parts.

4,211,571

METHOD OF PRODUCING GAS CONCRETE

Armin Hartmann, Rheinau, and Dieter Hums, Schrobenhausen, both of Fed. Rep. of Germany, assignors to Intong AB, Kumla, Sweden

Filed Aug. 29, 1978, Ser. No. 937,832
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739188
Int. Cl.[2] C04B *15/04, 31/02*
U.S. Cl. 106—87 **14 Claims**

1. In a method of producing gas concrete in which a castable mass suitable for the production of gas concrete, said castable mass comprising water, a lime component, and a sand component, is cast into a mold where it is permitted to rise and harden into a mass capable of being cut into a desired shape and wherein the hardened material is hydrothermally cured to form a gas concrete product, the improvement wherein said castable mass is prepared by the steps of:

pre-mixing water, a lime component comprising pulverized lime having a t_{60}-value of under 10 minutes, and a sand component to form a homogeneous lime-sand pre-mixture;

mixing a calcium sulphate-containing component with said homogeneous lime-sand pre-mixture to form a homogeneous calcium sulphate-containing mixture; and

mixing a rising agent with said homogeneous calcium sulphate-containing mixture to form said castable mass.

4,211,572

DRY-SET MORTARS AND METHOD FOR IMPROVING THE WATER RETENTIVITY THEREOF

Herman B. Wagner, Perkasie, Pa., and Jeffrey R. Ellis, Hightstown, N.J., assignors to Tile Council of America, Inc., Princeton, N.J.

Filed Apr. 17, 1978, Ser. No. 897,148
Int. Cl.[2] C04B *7/35, 7/352, 7/353*
U.S. Cl. 106—90 **28 Claims**

1. A dry composition capable of being mixed with water to form a dry-set mortar, said dry composition comprising, in percentages by weight of the dry composition

a hydraulic cement,

0 to 90 percent of an inert filler,

0.05 to 3.0 percent of a water retentive agent having a viscosity of 1,500 cps to 100,000 cps in 2 percent solution, and

a water retentivity promoter which is an organic material having at least one polar functional group capable of associating with water, which material alone does not have appreciable thickening properties for water, but which is capable of increasing the Index of Water Retentivity of the composition when mixed with water,

wherein the weight ratio of water retentive agent to promoter is in the range 20:1 to 1:2.

4,211,573

METHOD AND APPARATUS FOR THE PRODUCTION OF CEMENT CLINKER LOW IN ALKALI FROM ALKALI-CONTAINING RAW MATERIAL

Andris Abelitis, Rösrath, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,757
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712239
Int. Cl.[2] C04B *7/02*
U.S. Cl. 106—100 **5 Claims**

1. A method for the production of low alkali-cement clinker in a kiln from alkali-containing raw material comprising the steps:

pre-heating said raw material before introducing the material into the kiln;

de-acidifying said raw material prior to introduction into said kiln, and thereby producing deacidified combustion gases;

introducing the pre-heated, deacidified material into a kiln and sintering the material therein, thereby producing hot alkali-containing exhaust gases;

cooling a pre-determined portion of said hot alkali-containing gases from said sintering steps by mixing the pre-determined portion with a quantity of said pre-heated raw material bringing the temperature level of the gases from the sintering step to the temperature level of the gases from the deacidification step;

mixing the predetermined portion of the cooled alkali-containing gases with the combustion gases from the deacidification step and using the mixture for heating and calcining the material in the pre-heating step; and

removing the remaining portion of the alkali-containing gases from said sintering step for disposal.

4,211,574

PROCESS FOR MAKING A SOLID IMPREGNATED PRECURSOR OF A SOLUTION OF CELLULOSE

Clarence C. McCorsley, III, and Julianna K. Varga, both of Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed Jul. 26, 1977, Ser. No. 819,080
Int. Cl.[2] C08L *1/02*
U.S. Cl. 106—163 R **19 Claims**

1. A process for making a precursor of a solution containing cellulose dissolved in a tertiary amine oxide solvent for cellulose which comprises impregnating cellulose with a liquid tertiary amine oxide solvent containing water in an amount whereby the cellulose does not dissolve in the solvent under the conditions of impregnation but the cellulose becomes impregnated with the solvent in an amount which will dissolve the cellulose after water is removed and the impregnated cellulose is heated in the absence of additional solvent.

4,211,575

ASPHALT-SULFUR EMULSION COMPOSITION

Michael V. Burris, 1760 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 726,946, Sep. 27, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 1,536
Int. Cl.[2] C08L *95/00;* **C09D** *3/24*
U.S. Cl. 106—274 **5 Claims**

1. An asphalt-emulsion composition comprising:

an asphalt phase consisting essentially of between about 40 and about 70% paving grade asphalt, between about 10 and about 50% sulfur, and between about 5 and about 30% of a liquid petroleum hydrocarbon having a boiling point above about 350° F., and

a water phase having between about 0.2 and about 4.0 % by weight based on the total composition of an emulsion selected from the group consisting of a cationic and anionic emulsifiers and mixtures thereof,and

whereinsaid asphalt phase is over 50% , by weight, of the total composition.

4,211,576

PITCH AND ASPHALT COMPOSITIONS

Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 658,985, Feb. 18, 1976, abandoned. This application Aug. 2, 1977, Ser. No. 821,255

The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.

Int. Cl.[2] C08L *95/00*; C09D *3/36*

U.S. Cl. 106—278 **12 Claims**

1. A process for producing an improved pitch composition which comprises forming a slurry by admixing comminuted scrap rubber with a petroleum solvent selected from thermally stable highly refractory petroleum refinery FCC main column bottoms and TCC syntower bottoms having a boiling point between about 650° F. and 1100° F., wherein the petroleum solvent has a labile hydrogen content of about 0.3 percent or more, a benzyl hydrogen (α) content of about 1.5 percent or more, an aromatic hydrogen content of about 2 percent or more, and a content of β,γ and other hydrogen of about 4 percent or less; and heating said slurry at a temperature in the range between about 350° F. and 850° F. for a period of time between about 0.2 and 3 hours sufficient to convert the slurry into a homogeneous composition having a soft pitch-like consistency at temperatures in the range of −20° F. up to about 200° F.

4,211,577

PROCESS OF PURIFYING PLANT ANTHOCYANIN COLORS

Bruce K. Wallin, Sherman, N.Y., assignor to Welch Foods Inc., Westfield, N.Y.

Filed Sep. 13, 1977, Ser. No. 832,814

Int. Cl.[2] B01D *31/00*

U.S. Cl. 106—288 Q **26 Claims**

1. In a process for separating anthocyanin components from macromolecular components such as proteins, tannins, pectins and complexes thereof, the improvement comprising ultrafiltering a 500 to 2,000 ppm sulfur dioxide aqueous solution of said components through a membrane that passes said anthocyanins and retains said macromolecular components, whereby said anthocyanins are maintained in a discrete monomeric state in said sulfur dioxide solution and substantially separated from said macromolecular components in a single step process.

4,211,578

METHOD OF PRODUCING A CARBON BLACK SILICA PIGMENT

Oscar T. Scott, IV, Borger, Tex., assignor to J. M. Huber Corporation, Rumson, N.J.

Filed Jun. 8, 1979, Ser. No. 46,738

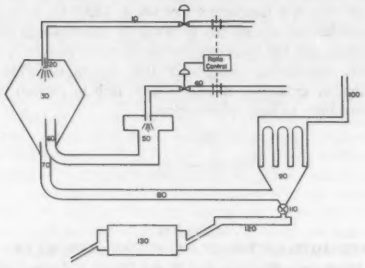
Int. Cl.[2] B01J *2/04*; C09C *1/28, 1/56, 1/60*

U.S. Cl. 106—307 **6 Claims**

1. A method of producing a combined carbon black silica pigment comprising the steps of:

(a) forming a slurry selected from the group consisting of silica slurry and sodium alumino silicate slurry;

(b) producing a carbon black exhaust gas in a carbon black furnace by the incomplete combustion of a hydrocarbon feedstock;



(c) spray drying the silica slurry in a spray dryer with the carbon black exhaust gas as the drying gas to form a combined carbon black silica pigment; and

(d) collecting the combined carbon black silica pigment.

4,211,579

METHOD OF PURIFYING INDUSTRIAL SUGAR SOLUTIONS

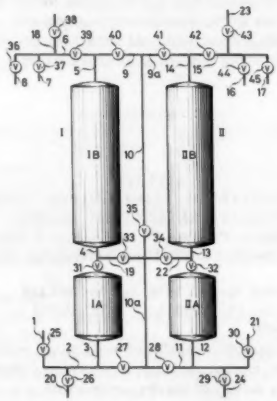
Gerhard Quentin, Pomona 134, 4040 Neuss, Fed. Rep. of Germany

Filed Aug. 2, 1978, Ser. No. 930,548

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2735995

Int. Cl.[2] C13D *3/14*

U.S. Cl. 127—46 A **8 Claims**



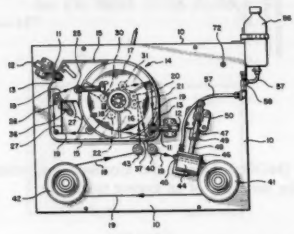
1. A method of purifying an industrial sugar solution by adsorption of non-sugar substances using an ion exchanger, comprising supplying said solution to said ion exchanger through a lower portion of said ion exchanger, thereby displacing a volume of water contained in said ion exchanger; withdrawing a purified sugar solution through an upper portion of said ion exchanger; eluting said ion exchange through an upper portion of said ion exchanger; displacing remaining industrial sugar solution in said ion exchanger; and withdrawing said non-sugar substances through a lower portion of said ion exchanger.

4,211,580

METHOD AND APPARATUS FOR CLEANING AN ENDLESS STRIP OF FILM, TAPE, OR THE LIKE

Jaren P. Vowles, 445 E. 400 North, Centerville, Utah 84014

Filed Jan. 15, 1979, Ser. No. 3,268
Int. Cl.[2] B08B 1/02
U.S. Cl. 134—9 **11 Claims**



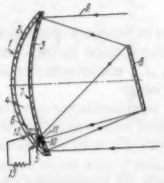
1. A method for cleaning an endless strip of motion picture film, magnetic tape, magnetic film, or the like contained in a reel formed on a rotatable hub housed in a casing, wherein the strip is withdrawn from the center of the reel, directed through guide means within said casing past an operational opening in said casing and is then returned to the ouside of the reel, said method comprising withdrawing the strip from the center of the reel, feeding the strip through an access opening in said casing, said access opening being separate and apart from said operational opening in said casing; forming the strip into a loop outside of said casing; passing the strip in said loop through brushing and cleaning means; feeding the strip from said loop back into said casing through said access opening; returning the strip to the guide means in said casing to be directed past said operational opening and back to the outside of the reel; and continuously advancing successive portions of the endless strip from the center of the reel through said access opening to said brushing and cleaning means back through said access opening, past said operational opening, and then returned to the outside of said reel.

4,211,581

SOLAR PHOTOELECTRIC CONVERSION APPARATUS WITH COOLING MEANS

Olga V. Vasilinina, ulitsa Maslova 6, kv. 49, Monino Moskovskoi oblasti; Jury K. Kidyashev, ulitsa Bazhova, 15, korpus 1, kv. 195, Moscow; Valery N. Potapov, ulitsa Timiryazevskaya, 13, kv. 213, Moscow; Stanislav V. Ryabikov, pereulok Vasnetsova, 12, kv. 64, Moscow; Anatoly M. Stepanov, 1 mikroraion, ulitsa Repina, 10, kv. 18, Ashkhabad, and Dmitry S. Strebkov, Kirovogradsky proezd, 3, korpus 1, kv. 17, Moscow, all of U.S.S.R.

Filed Apr. 10, 1979, Ser. No. 28,900
Int. Cl.[2] H01L 31/04
U.S. Cl. 136—89 CA **1 Claim**



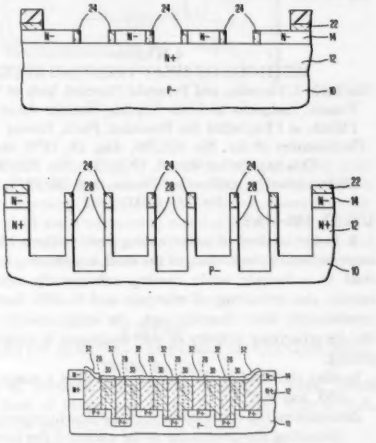
1. A solar photoelectric conversion apparatus comprising a hollow hermetically sealed reservoir; a transparent liquid heat carrier within said reservoir and occupying the lower portion of the cavity formed by the reservoir; a light converter immersed in said heat carrier and having an active surface; a solar concentrator adapted to be in the optical path of a beam of a solar radiation incident on said active surface of said light converter; and power leads of said light converter running out of said reservoir without disturbing its hermetic condition, whereby during operation of the apparatus vapors of the heat carrier condense on the inner walls of said reservoir and return by gravity to said liquid in said lower portion of said cavity, thereby cooling said liquid and said light converter immersed therein by "thermal siphon" action.

4,211,582

PROCESS FOR MAKING LARGE AREA ISOLATION TRENCHES UTILIZING A TWO-STEP SELECTIVE ETCHING TECHNIQUE

Cheng T. Horng, Fishkill, N.Y., and Robert O. Schwenker, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,997
Int. Cl.[2] H01L 21/76, 21/306
U.S. Cl. 148—1.5 **7 Claims**



1. A method for making wide, deep recessed oxide isolation trenches in a semiconductor substrate comprising:

forming a spaced succession of narrow, shallow trenches in said substrate, said shallow trenches having substantially vertical sidewalls and being saparated by semiconductor mesas,

depositing a predetermined thickness of a masking material on the sidewall and on the bottom surfaces of said shallow trenches and on the top surfaces of said mesas,

etching said coating to remove said coating substantially only from said bottom surfaces of said shallow trenches and from the top surfaces of said mesas,

reactively ion etching said substrate using said coating on said sidewalls of said shallow trenches as a reactive ion etching mask to produce a spaced succession of narrow, deep trenches separated by narrow semiconductor mesas,

the thickness of said narrow semiconductor mesas being substantially equal to and determined by the thickness of said coating, and

thermally oxidizing said substrate so as to completely oxidize the semiconductor material of said narrow semiconductor mesas.

4,211,583
CARD-CLOTHING WIRE

Brian K. M. Eadie, Johnstone, and William H. C. Parker, Glasgow, both of Scotland, assignors to Eadie Bros. & Co. Limited, Paisley, Scotland

Filed Sep. 20, 1978, Ser. No. 944,025
Claims priority, application United Kingdom, Oct. 11, 1977, 42209/77
Int. Cl.[2] D01G *15/84*
U.S. Cl. 148—6.35 **4 Claims**

1. A method of producing card-clothing wire for use on a roller in a textile fibre processing machine, comprising providing wire of carbon steel with a longitudinally extending rib and saw teeth projecting therefrom at spaced intervals along the wire; forming the wire into a helical coil having an attitude similar to that it is required to adopt in use when mounted on said roller, with the teeth projecting from the rib in a direction that is substantially radial with respect to the roller on which it is to be mounted, and then subjecting the surface of the coil of wire to a high temperature chromium diffusion process such that a surface layer of the wire is enriched with chromium to an extent which provides the surface of the wire with a hardness in excess of 1500 HV (i.e. 1500 Kg/mm^2) as measured on the Vickers hardness scale so that the hard coating is not subjected to bending strains during subsequent application of the wire to the roller.

4,211,584
METHODS OF HEAT-TREATING STEEL

Mathurin L'Hermite, and François Pierrard, both of Versailles, France, assignors to L'Air Liquide, Societe Anomyme pour l'Etude et l'Explotion des Procedes, Paris, France

Continuation of Ser. No. 605,286, Aug. 18, 1975, abandoned.
This application Apr. 6, 1977, Ser. No. 785,092
Claims priority, application France, Sep. 20, 1974, 74 31744
Int. Cl.[2] C21D *1/48*
U.S. Cl. 148—16.7 **6 Claims**

1. In the method of heat-treating steel, without altering the composition of the surface of the steel, comprising heating the steel in a furnace while causing substantially non-reacting carrier gas consisting of nitrogen and 0–10% hydrogen to continuously flow therethrough, the improvement whereby the decarburizing activity of wet hydrogen is avoided, comprising:

heating the steel in the furnace to within a range between 650° and 900° C.;

determining the water content of the flowing atmosphere by measuring the dew-point at the outlet of the furnace; and

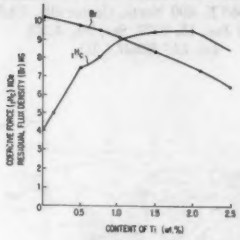
varying the composition of the atmosphere by mixing with the carrier gas an amount of hydrocarbon which is sufficient to reduce the water content of the atmosphere in the furnace, and therefore the dew-point of said atmosphere, to a sufficiently low level to avoid decarburization of the steel, but which amount of hydrocarbon is insufficient to cause carburization of the steel.

4,211,585
SAMARIUM-COBALT-COPPER-IRON-TITANIUM PERMANENT MAGNETS

Koichiro Inomata, and Masakazu Yamada, both of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1977, Ser. No. 775,471
Claims priority, application Japan, Mar. 10, 1976, 51-24992
Int. Cl.[2] H01F *1/04*
U.S. Cl. 148—31.57 **2 Claims**

1. A permanent magnet, which comprises a composition containing a Sm-Co compound and consisting essentially of 23 to 30 wt.% of Sm, 0.2 to 1.5 wt.% Ti, 9 to 13 wt.% Cu, 3 to 12 wt.% Fe and the balance Co, said magnet having a residual flux density (Br) of about 10 (KG), a coercive force ($_IH_C$) of about 8 (KOe) and a maximum energy product (BH max) of

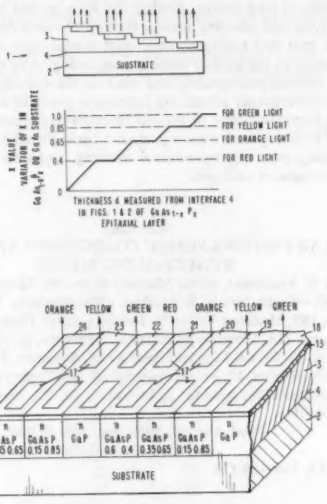


about 25 (MGOe), having the aforesaid magnetic properties without the necessity of an ageing treatment.

4,211,586
METHOD OF FABRICATING MULTICOLOR LIGHT EMITTING DIODE ARRAY UTILIZING STEPPED GRADED EPITAXIAL LAYERS

Frank F. Fang, and Kwang K. Shih, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 835,097, Sep. 21, 1977, Pat. No. 4,148,045.
This application Nov. 6, 1978, Ser. No. 957,966
Int. Cl.[2] H01L *21/20, 29/205*
U.S. Cl. 148—175 **5 Claims**



1. In the process of fabrication of light emitting diode arrays wherein color is determined by the concentration of the variable x in an $AB_{1-x}C_x$ semiconductor at each diode, the improvement comprising:

providing on a semiconductor substrate of the type AB an epitaxial body of monocrystalline semiconductor material of the type $AB_{1-x}C_x$ with variations in the concentration of x that progress from a major surface through the crystal body in regions of incremental change followed by regions of cumulatively higher but constant value of x;

exposing for each diode a portion of said body at a particular region of cumulative higher constant value of x; and

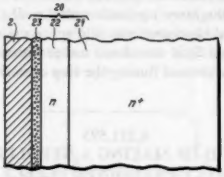
forming a diode at each said exposed portion.

4,211,587

PROCESS FOR PRODUCING A METAL TO COMPOUND SEMICONDUCTOR CONTACT HAVING A POTENTIAL BARRIER OF PREDETERMINED HEIGHT

Jean Massies, and Tronc L. Nuyen, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 29, 1978, Ser. No. 974,547
Claims priority, application France, Dec. 29, 1977, 77 39609
Int. Cl.² H01L *21/26, 21/66*
U.S. Cl. 148—187 **9 Claims**



6. A process for producing a Schottky contact on a compound semiconductor specimen, comprising the following steps:

(a) operating in a vacuum chamber, cleaning the surface of said specimen to remove the impurities including oxygen traces;

(b) creating ultra-vacuum conditions in said chamber, then introducing hydrogen sulphide or selenide in gaseous phase until the pressure rises to about 10^{-6} Torr;

(c) after a space of time Δt_1, pumping the gaseous phase so as to restore the ultra-vacuum conditions, then introducing pure oxygen until the pressure rises to about 10^{-6} Torr and maintaining this gas in contact with the specimen for a time Δt_2, then pumping the gas to restore the ultra-vacuum conditions;

(d) depositing a metal layer onto the specimen by a conventional method;

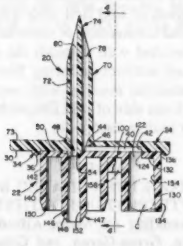
(e) heat treating the specimen.

4,211,588

METHOD OF MANUFACTURING A VENTED PIERCING DEVICE FOR INTRAVENOUS ADMINISTRATION SETS

Kenneth C. Raines, Bethlehem, Pa., assignor to National Patent Development Corporation, New York, N.Y.

Filed May 10, 1978, Ser. No. 904,542
Int. Cl.² A61M *5/00*; B32B *31/16*
U.S. Cl. 156—73.1 **11 Claims**



1. A method of manufacturing a vented piercing device for use with small volume parenteral containers, the method including the steps of:

injection moldng a first portion of the piercing device;

forming a fluid passage and an air passage in said first portion;

injection molding a second portion of the piercing device including a step of forming a pair of separate passages one of which is part ofa fluid path for discharging parenteral fluid from a small volume container and the other of which is part of an air path for venting such small volume container, said first portion passages being positioned to fluidly connect with said second portion passages when said portions are connected together; and

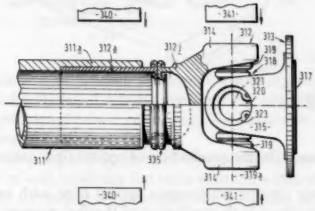
welding said first portion to said second portion to form an integral vented piercing device for use with small volume containers.

4,211,589

SHAFT AND UNIVERSAL JOINT ASSEMBLY

Leslie G. Fisher, Birmingham, and Bertram J. Palmer, Burton on Trent, both of England, assignors to GKN Transmissions Limited, Birmingham, England

Filed Feb. 9, 1978, Ser. No. 876,264
Claims priority, application United Kingdom, Feb. 15, 1977, 6354/77
Int. Cl.² B29C *27/00*; B32B *31/16*; F16C *1/26*; F16L *27/06*
U.S. Cl. 156—73.5 **7 Claims**



1. A method of making an assembly of a universal joint member and a shaft formed of fibre reinforced synthetic resin material comprising establishing an adhesive connection between the shaft and a connecting member formed of a material capable of being welded to the universal joint member, and subsequently welding the connecting member to the universal joint member.

4,211,590

METHOD OF MAKING PERFORATED CONTOURED TRIM PANEL

Raymond G. Steward, Port Huron; Stuart G. Boyd, North Street, both of Mich., and Frank P. Civardi, Wayne, N.J., assignors to Inmont Corporation, Clifton, N.J.

Filed Jul. 21, 1978, Ser. No. 926,898
Int. Cl.² B32B *5/18*
U.S. Cl. 156—79 **14 Claims**

1. The method of making a smooth contoured resilient panel comprising a composite laminar sheet consisting of a pair of thermoplastic films tenaciously bonded to the face surfaces of an intervening thermoplastic foam core having closed cells containing residual blowing agent and air which comprises the steps of providing a substantially flat section of said sheet, perforating said sheet to impart a plurality of apertures therethrough over at least a portion of the surface thereof, heating said sheet to an elevated temperature sufficient to effect a heat softening thereof and a post-blow and expansion of said foam core producing an expanded sheet incorporating local dimpled recesses in the faces thereof in the vicinity surrounding the apertures defining thin sections of reduced thickness relative to

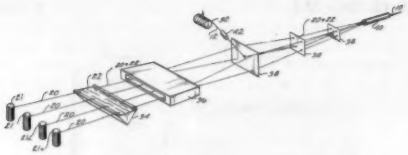
that of the adjacent non-perforated areas of said sheet, thermoforming the heated expanded said sheet between mold surfaces to effect contouring thereof and compaction of said foam core to a thickness of at least equal to the thickness of said thin sections forming a contoured sheet having substantially smooth exterior faces, and thereafter cooling the contoured compacted said sheet to effect rigidification thereof and retention of the compacted contoured configuration.

4,211,591

PRODUCTION OF OPTICAL FIBER CABLES

Kenneth M. Stiles, San Dimas, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.

Division of Ser. No. 600,202, Jul. 30, 1975, Pat. No. 4,113,349.
This application Aug. 23, 1978, Ser. No. 936,094
Int. Cl.[2] B29D *11/00*; G02B *5/14*
U.S. Cl. 156—83 **20 Claims**



1. A process for the production of optical fiber cables which comprises:

(a) surface coating an elongate optical fiber with an elastomer having a high coefficient of thermal expansion;

(b) applying to the elastomer a settable resin having a low coefficient of thermal expansion to form an outer resin shell surrounding said elastomer coated optical fiber, the ratio coefficients of thermal expansion of the elastomer coating to said resin being from about 3:1 to about 30:1;

(c) setting the applied resin forming the shell when said elastomer is in a thermally expanded state to form a resultant optical fiber cable having a solidified resin shell surrounding a thermally expanded elastomer coating; and

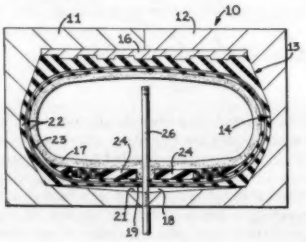
(d) cooling the resultant optical fiber cable to contract by the differential of coefficients of thermal expansion of said solidified resin shell and elastomer coating, the elastomer coating more than the resin shell to remove compressive loads from optical fiber.

4,211,592

METHOD OF BUILDING A CLOSED TUBE-TIRE

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 14, 1978, Ser. No. 933,314
Int. Cl.[2] B29H *3/00, 17/00*
U.S. Cl. 156—123 R **2 Claims**



1. In a method of building a tube-tire in which a green tube-tire carcass (13) is constructed by laying up layers of uncured elastomer (22) and at least one ply of reinforcing elements (23) on a disintegratable core (17) and then placing the green tube-tire carcass (13) into a mold cavity (14) of a curing mold (10), heating the mold (10) to a preselected temperature and circulating heated fluid under pressure through the disintegratable core (17) and inside of the carcass thereby curing the elastomer, the improvement comprising:

constructing the green tube-tire carcass (13) so that it is smaller in cross section than a cross section of the mold cavity (14) and providing a space (18) between the inner circumferential wall (19) of the green tube-tire carcass (13) and an adjacent surface (21) of the mold cavity (14);

positioning an excess of uncured elastomer (24) at the inner surface of the inner circumferential wall (19); and

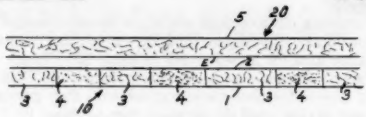
flowing heated elastomer into said space under the influence of the heated fluid circulated under pressure through the inside of the carcass during the step of curing the uncured elastomer.

4,211,593

METHOD OF MAKING A NEEDLED AND ORNAMENTALLY PATTERNED FLEECE MATERIAL

Herbert Lochner, Kempen, Fed. Rep. of Germany, assignor to Cikalon Vliesstoffwerk GmbH, Kempen, Fed. Rep. of Germany

Continuation of Ser. No. 788,232, Apr. 18, 1977, abandoned.
This application May 31, 1978, Ser. No. 911,330
Int. Cl.[2] B32B *7/08, 7/14*
U.S. Cl. 156—148 **13 Claims**



1. A method of making a needled fleece fabric material, which includes the steps of: preparing at least one first preneedled web of fibrous fleece material including fibers and binding together at least partially the fibers of said first web by adhering the fibers of certain areas, preparing a second pre-needled web of fleece material free from adhering fibers in certain areas, placing said first web of fleece material in face-to-face contact with said second web of fleece material in such manner that the back side of the first web of fleece material provided with adhering fibers is in contact with the front side of the second web of fleece material free from adhering fibers in certain areas, and commonly needling said first and second webs of fleece material from the back side of said second web in areas which have no adhering fibers through the two webs and through the areas of said first web which have adhering fibers to form a solid connection of material all over from the back side of said second web through the entire first web in areas both with and without adhering fibers over the entire surface of fleece material needled with each other to form a pile visible on the front side of said first web of fleece material having fibers from said second web.

4,211,594

JOINING TOGETHER SHAPED BODIES OF POLYTETRAFLUOROETHYLENE

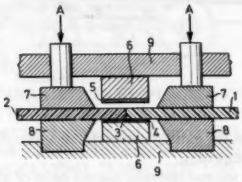
Günter Freitag, Frankfurt am Main; Alfred Krahl, Eschborn; Gerhard Ullmann, Gross-Gerau, and Günter Wenzel, Kelkheim, all of Fed. Rep. of Germany, assignors to Sigri Elektrographit Gesellschaft mit Beschränkter Haftung, Meitingen bei Augsburg, Fed. Rep. of Germany

Continuation of Ser. No. 733,073, Oct. 18, 1976, abandoned.
This application Jan. 9, 1978, Ser. No. 867,773
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1975, 2549571
Int. Cl.[2] B65H *69/08*; B29D *23/01*; B32B *31/20*
U.S. Cl. 156—158 **1 Claim**

1. Method for joining together edge surfaces of polytetraflu-

oroethylene material by a butt joint which comprises the steps of:

(a) placing the polytetrafluoroethylene edges to be joined in a butting relationship in a confining chamber defined as an upper heating element above a strip of the polytetrafluoroethylene material along both sides of the abutting surfaces, a lower heating element below the strip of polytetrafluoroethylene material along both sides of the abutting surface, wherein the distance between the two heating elements is greater than the thickness of the polytetrafluoroethylene strip before heating and less than the expanded polytetrafluoroethylene during heating, and a clamping jaw on each side of the abutting surfaces holding the polytetrafluoroethylene material adjacent the strip of material between said upper and lower heating elements;



(b) pressing together the abutting surfaces in the absence of other material therebetween;

(c) heating the abutting surfaces to a temperature above the crystallite melting temperature of the polytetrafluoroethylene;

(d) generating a pressure within said chamber by the expending polytetrafluoroethylene which braces itself against the chamber walls;

(e) maintaining the heated abutting surfaces at a temperature between 340° and 430° C. at a contact pressure and welding time of 60 to 300N/cm^2 and 10 to 120 minutes, respectively, to weld abutting surfaces; and wherein the heated polytetrafluoroethylene material is cooled down and during the cooling-down phase an additional pressure is exerted on the butt joint by moving at least one clamping jaw in a direction toward the butt joint.

4,211,595

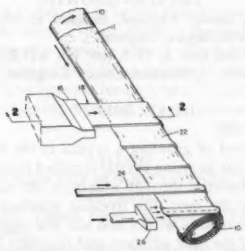
METHOD OF COATING PIPE

Carlos M. Samour, Wellesley, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Oct. 10, 1978, Ser. No. 949,698

Int. Cl.^{2} F16L *11/16*; B65H *81/00*; B32B *15/08*

U.S. Cl. 156—187 **9 Claims**



1. A method of coating pipe which comprises the steps of adhering a layer of corrosion protective material to the surface of the pipe to form a cooling thereon, and extruding directly onto said coating a layer comprising polyolefin in overlapping spiral wrapping to form a protective outer sheath over said coating.

4,211,596

METHOD OF FABRICATING TUBULAR CASING FOR PROCESSED FOODS

Stanley Lustig, Park Forest, and Ganapathy Vasudevan, Bolingbrook, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 753,818, Dec. 23, 1976, Pat. No. 4,131,137.

This application Oct. 13, 1978, Ser. No. 951,003

Int. Cl.^{2} B29D *7/02*

U.S. Cl. 156—244.12 **7 Claims**

1. A method of forming a composite tubular casing from a substantially flattened tubular substrate of cellulosic material having two longitudinal edges and two relatively flat sides, comprising the steps of:

melt extruding a first layer of thermoplastic material over one of said relatively flat sides with the width of said first layer extending a predetermined minimum distance beyond each longitudinal edge;

melt extruding a second layer of thermoplastic material over the other of said relatively flat sides such that the width of the second layer extends beyond each longitudinal edge and in overlapping engagement with said first layer to form a longitudinal seam adjacent each longitudinal edge;

trimming a portion of each seam extending beyond each longitudinal edge; and

forming a longitudinal bead in the remaining portion of each longitudinal seam in sufficient proximity thereto to eliminate void space between said layers of thermoplastic material and each longitudinal edge.

4,211,597

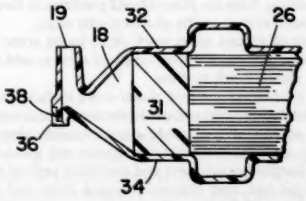
METHOD FOR MAKING ARTIFICIAL KIDNEY

Bennie J. Lipps, Walnut Creek, Calif.; William P. Murphy, Jr., Miami, Fla., and Frank W. Mather, III, Lafayette, Calif., assignors to Cordis Dow Corp., Miami, Fla.

Filed Jun. 10, 1977, Ser. No. 805,601

Int. Cl.^{2} B29C *6/04*; B01D *31/00*

U.S. Cl. 156—245 **12 Claims**



1. A production line method for making a one-piece integral non-disassembleable, hollow fiber device having a pair of fluid-tight end chambers separated from each other and joined into an integral unit by a fluid-tight intervening chamber, said intervening chamber containing therein a plurality of capillary hollow fibers providing communication between the interiors

of said end chambers through the passageways in said fibers, which comprises the steps of:

(1) feeding a tow comprising a plurality of hollow fibers in substantially parallel array along a line,

(2) providing means capable of forming a tubesheet around said tow and sealing said fibers therein,

(3) forming a first tubesheet on said tow at a first location,

(4) forming a second tubesheet on said tow at a second location spaced longitudinally from said first location,

(5) transversely severing each of said first and said second tubesheet and said hollow fibers therein to thereby form a fiber bundle assembly,

(6) forming a first portion of a jacket member,

(7) forming a second portion of a jacket member, said first and said second jacket portions being shaped to house said fiber bundle assembly and to sealingly mate with said first and said second tubesheets and with each other to thereby define a pair of fluid-tight chambers separated from each other by an intervening fluid-tight chamber,

(8) positioning said fiber bundle assembly between said first and said second jacket portions, and

(9) bonding said jacket portions to said tubesheets and to each other to thereby form said one-piece integral hollow fiber device.

4,211,598

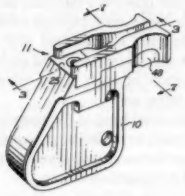
FOIL APPLICATOR FOR FOLDING AND APPLYING ADHESIVE BACKED FOIL TO THE EDGE OF A WORK PIECE

Herbert F. Diegel, 1524 E. Culver, Phoenix, Ariz. 85006

Filed Apr. 20, 1979, Ser. No. 32,004

Int. Cl.[2] **B31F** *1/00*; **B44C** *7/00*; **B32B** *31/00*

U.S. Cl. 156—468 **8 Claims**



1. A foil applicator, for folding and applying adhesive-backed foil to the edge of a substantially flat work piece, and to the flat surfaces of the work piece adjacent the edge, comprising:

a. a base having a platform with a planar work surface for contacting a non-adhesive side of said foil and urging the adhesive side of said foil against the edge of said work piece;

b. said platform having a foil entrance end and a foil exit end, said foil exit end terminating in a smoothly curved surface extending from the plane of said platform to form a smoothly rounded corner at the platform exit edge;

c. a pair of spaced apart work piece guide arms;

d. attaching means for attaching said arms to said base adjacent said planar work surface;

e. said guide arms and said planar work surface forming a guide channel to receive and guide the work piece edge relative to said applicator, said guide arms extending along said planar work surface from said foil entrance end to said foil exit end and continuing adjacent said smoothly curved surface at the foil exit end, said channel tapering from said foil entrance end to said foil exit end;

f. said guide arms movable toward and away from each other; and

g. biasing means urging said guide arms toward each other so as to grip a work piece positioned in said channel and force said foil into contact with the surfaces of said work piece adjacent the work piece edge.

4,211,599

CUT-AND-WELD DEVICE FOR SUPERIMPOSED FOILS ADVANCED IN THE FORM OF STRIPS

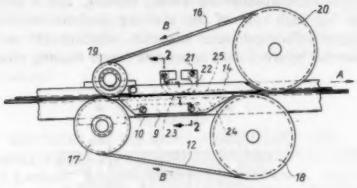
German Bolter, Neuffen; Herbert Helmle, and Hans Beck, both of Nurtingen, all of Fed. Rep. of Germany, assignors to Hans Beck, Nurtingen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,836

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751118

Int. Cl.[2] **B32B** *31/18*

U.S. Cl. 156—494 **4 Claims**



1. Apparatus for cutting and welding a pair of superimposed foil layers, comprising

(a) first and second laterally spaced pairs of adjacent endless belts each having adjacent horizontal runs for gripping and conveying the superimposed foil layers in a given horizontal direction in a common generally horizontal plane defined between said horizontal runs;

(b) heated cutting means arranged between and extending parallel with said spaced pairs of belts above and generally normal to said plane and extending downwardly therethrough for cutting the foil layers and simultaneously welding together the cut edges of the superimposed foil layers; and

(c) tension rail means arranged between and extending parallel with said spaced pairs of belts below and generally normal to said plane, said rail means extending continuously from a position upstream of said cutting means to a position downstream of said cutting means, the upper edge of said rail means being inclined and extending upwardly through said plane in said given direction, whereby as the superimposed foil layers are gripped and conveyed by said spaced pairs of belts along said tension rail means, the transverse tension on the foil layers increases along the length of said rail means to prevent the folding of the superimposed foil layers, and said heated cutting means cuts and welds the superimposed foil layers together.

4,211,600

CRYSTAL GROWTH

Michael Cole, Sandy, England, assignor to Metals Research Limited, Hertfordshire, England

Filed Dec. 3, 1975, Ser. No. 637,309

Claims priority, application United Kingdom, Dec. 4, 1974, 52379/74

Int. Cl.[2] **B01J** *17/18*

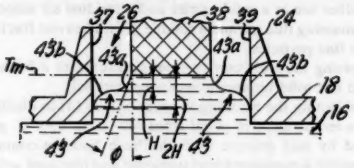
U.S. Cl. 156—608 **56 Claims**

1. In a method of growing a crystal in the form of a thin strip, wherein the growing crystal is pulled from a melt of the crystallisable material through a narrow slit whose walls are not wetted by the melt, the freezing interface between the crystal and the melt is within said slit, the improvement that the pressure of the melt adjacent said interface is at a level of at least

$$2S/b+\sqrt{2Szg}$$

where

S is the surface tension of the crystallisable material
b is the thickness of the slit
z is the density of the melt



g is the acceleration due to gravity
and the depth of the slit is at least $(2S/zg)^{\frac{1}{2}}$.

4,211,601

DEVICE FABRICATION BY PLASMA ETCHING

Cyril J. Mogab, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 31, 1978, Ser. No. 929,569
Int. Cl.² H01L *21/306;* C23F *1/02*
U.S. Cl. 156—643 **18 Claims**

1. Process for fabrication of an article comprising at least one operation during which the article undergoing fabrication comprises a surface of material to be etched, wherein the said article is etched within a plasma environment contained within an apparatus, the plasma resulting from imposition of an electrical field across gaseous reactant between two electrodes, the material to be etched comprising a silicon-containing composition, etching being primarily due to chemical reaction with the said material to be etched, CHARACTERIZED IN THAT the said gaseous reactant comprises the equivalent of a mixture of at least one halide and a halogen which in the said plasma results in the said chemical reaction in which the said halide is a fluorocarbon and in which the said gaseous reactant has an equivalent fluorocarbon/atomic halogen ratio greater than that contained in CF_3Cl.

4,211,602

SURFACE TREATMENT FOR BLOOD DIALYSIS CARTRIDGES

Robert C. Brumfield, 455 S. Oakland Ave., Pasadena, Calif. 91101

Filed May 4, 1978, Ser. No. 902,970
Int. Cl.² B01D *13/00, 39/16;* B01K *1/00*
U.S. Cl. 156—644 **7 Claims**

1. In the manufacture of blood dialysis equipment having hollow dialysis fibers whose ends are embedded in a plastic tube sheet which is then cut to form a manifold surface providing access to the interior of the fibers, a method which comprises minimizing the negative effects of rough edges at the fiber ends produced by the cutting process by causing the radii of the fiber ends to increase through heat treatment, chemical reaction, solvent action or chemical composition deposit.

4,211,603

MULTILAYER CIRCUIT BOARD CONSTRUCTION AND METHOD

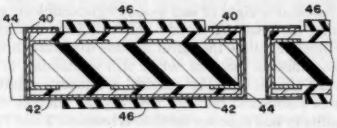
Douglas A. Reed, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 1, 1978, Ser. No. 901,904
Int. Cl.² C23F *1/02*
U.S. Cl. 156—659.1 **7 Claims**

1. A method of manufacturing a multilayer circuit board that includes a plurality of superimposed conductor patterns supported on an insulating substrate and interconnected electrically by multilayer metal-lined through-holes, comprising the subsequential steps of:

(a) providing an insulating substrate having at least one through-hole, a metal sleeve lining said through-hole, and a first conductor pattern on a major surface of the substrate, said pattern including a pad area surrounding an opening of said through-hole and joined to said sleeve,

(b) applying a permanent coating of an insulating resin to the pattern-bearing surface, leaving said pad and the opening of said through-hole uncovered,



(c) depositing a continuous layer of metal on the resulting structure, completely covering said coating and any exposed metal surface, including said pad area and sleeve, and

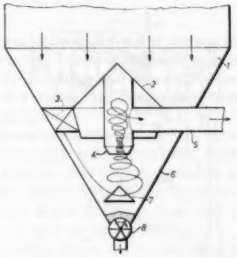
(d) selectively removing portions of said metal layer to form a second conductor pattern overlying said first pattern and joined to it by a rivet-like multilayer electrical interconnection formed by said pad area, through-hole sleeve and the metal deposited on them in step c).

4,211,604

APPARATUS FOR THE MECHANICAL SEPARATION OF SOLIDS FROM DRYING GAS IN SPRAY DRIERS

Edgar Muschelknautz, Leverkusen; Heiko Herold, Dormagen; Kunz Brunner, Cologne, and Walter Horstmann, Schildgen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 4, 1976, Ser. No. 655,319
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1975, 2508266
Int. Cl.² B01D *1/18*
U.S. Cl. 159—4 D **12 Claims**



1. An apparatus for the mechanical separation of solids from drying gas in spray driers comprising an axial guide means for causing gas leaving the drying chamber to rotate arranged in the lower conical part of the drier and connected by a rotationally symmetrical cowl to a vertical central down pipe having a downwardly disposed open inlet end within the lower conical part for receiving gas from the lower conical part, and at least one radial outflow conduit having an open inlet end communicated with the down pipe for receiving gas therefrom and extending from its inlet end radially outwardly to without the drier at the level of the guide means for discharge of gas from the drier.

4,211,605
HIGH YIELD CHEMIMECHANICAL PULPING PROCESSES

William R. Saxton, l'Orignal, and William H. Lawford, Hawkesbury, both of Canada, assignors to Canadian International Paper Company, Quebec, Canada

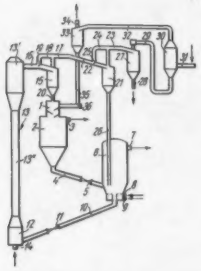
Filed Aug. 3, 1978, Ser. No. 930,793
Int. Cl.[2] D21C *3/06, 3/12*
U.S. Cl. 162—64 **13 Claims**

1. A high yield chemimechanical pulping process for producing pulp from woody lignocellulosic material, which process comprises treating said woody lignocellulosic material with sulfur dioxide in an amount of at least about 1 percent by weight based on weight of said woody lignocellulosic material, sulfonating the resulting woody lignocellulosic material for a time sufficient to allow the suffur dioxide to diffuse throughout the lignocellulosic material while still containing at least 1 percent by weight of sulfur dioxide in aqueous solution of a mixture of sulfite and bisulfite wherein the amount of sulfite and bisulfite in said aqueous solution is between 2 and 7 percent by weight calculated as sodium sulfite at a temperature of between about 100° C. and 150° C. for a period of between about 10 and 90 minutes, said aqueous solution having a pH of between about 6 and 8.5 at end of said sulfonating, without reducing the yield of pulp below about 90 percent by weight, and subsequently subjecting the resulting sulfonated woody lignocellulosic material to mechanical defibration.

4,211,606
METHOD FOR THERMAL PROCESSING BITUMEN-CONTAINING MATERIALS AND DEVICE FOR REALIZATION OF SAME

Jury V. Ponomarev, ulitsa Chkalova, 39, kv. 15; Alexandr S. Smirnov, Leninsky prospekt, 73/8, kv. 149; Boris I. Tyagunov, ulitsa Panferova, 8, kv. 22; Vitaly I. Chikul, ulitsa Panferova, 8, kv. 170, all of Moscow; Mark Y. Gubergrits, ulitsa Lomonosova, 17, kv. 12, Tallin; Mart A. Marguste, ulitsa Rebase, 3, Tallin Nymme; Viktor M. Efimov, ulitsa Vyidu, 4, kv. 5; Evgeny F. Petukhov, Narvskoe shosse, 53, kv. 14, both of Kokhtla-Yarve; Yalmar S. Ulanen, ulitsa Kuuze, 3, kv. 3, and Olga S. Chikul, ulitsa Uus, 13, kv. 5, both of Estonskaya SSR, Kiviyli, all of U.S.S.R.

Filed Aug. 19, 1975, Ser. No. 605,816
Int. Cl.[2] C10B *49/18*
U.S. Cl. 201—12 **2 Claims**



1. A continuous method of thermally processing a solid bitumen-containing material, comprising:

(a) subjecting a mixture containing air and a heat-carrier consisting essentially of hot coke and hot fine ash particles from a previously combusted solid bitumen-containing material to complete thermal destruction in an aerofountain-type furnace at a temperature of about from 700° C. to 1100° C. generated by said mixture of heat-carrier and air, to obtain an air suspension consisting essentially of air, flue gas, and hot, relatively fine ash particles;

(b) separating the air suspension containing the hot fine ash particles into an air suspension carrying a heavier fraction of the fine particles and an air suspension carrying a lighter fraction of the fine particles;

(c) separating the air suspension carrying the heavier fraction of the fine particles from step (b) into an ash for further use as a solid carrier and a residual air suspension containing flue gas and a residue of said heavier fraction of the fine particles;

(d) mixing the solid carrier from step (c) with a fresh, dry, and hot solid bitumen-containing material;

(e) subjecting the resulting mixture of step (d) to distillation at a temperature of about from 450° C. to 650° C. generated by said mixture until the fresh bitumen-containing material is converted into semicoke and liberated volatiles are removed;

(f) subjecting the resulting product from step (e) to gasification by means of steam-air or steam-oxygen whereby the temperature of said mixture containing the distillation residue is raised to about from 600° C. to 900° C. as a result of the exothermic reaction which occurs in gasifying the combustible components of the semicoke liberating volatiles which are removed and converting the semicoke into coke;

(g) recycling the gasification residue as a heat carrier and consisting of hot coke and the hot fine ash particles from the previously combusted solid bitumen-containing material into said aerofountain-type furnace where it is admixed with air and subjected to complete thermal destruction as in step (a) to produce the air suspension of fine particles corresponding to that produced in step (a) which is then recycled as a heat carrier;

(h) mixing the air suspension carrying the lighter fraction of the fine particles from step (b) with the residual air suspension containing flue gas and the residue of the heavier fraction of the fine particles from step (c);

(i) separating the resulting air suspension from step (h) into an air suspension carrying a second heavier fraction of the fine particles and an air suspension carrying a second lighter fraction of the fine particles;

(j) separating the air suspension carrying the second heavier fraction of the fine particles from step (i) into an ash for further use as a second solid carrier and a second residual air suspension containing flue gas and a residue of said second heavier fraction of the fine particles; and

(k) mixing the second solid carrier from step (j) with the distillation residue resulting from step (e).

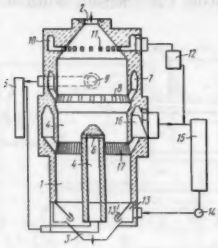
4,211,607
DRY COKE QUENCHING PROCESS

Vasily E. Privalov, ulitsa Galana, 5, kv. 13; Ivan G. Zubilin, ulitsa 23 avgusta, 18, kv. 15; Zoltan-Ivan I. Todavchich, ulitsa Nijutona, 123/22, kv. 48; Nikolai K. Kulakov, ulitsa Akademika Pavlova, 132, kv. 223; Adolf N. Silka, ulitsa Kostomarovskaya, 5/7, kv. 15; Alexandr N. Minasov, ulitsa Ivanova, 12/16, kv. 59, all of Kharkov; Mikhail G. Ananievsky, ploschad Metallurgov, 5, kv. 15, Cherepovets; Naum E. Temkin, ulitsa Vologodskaya, 4, kv. 15, Cherepovets, and Vyacheslav I. Solodkov, ploschad Metallurgov, 2, kv. 22, Cherepovets, all of U.S.S.R.

Filed Feb. 28, 1978, Ser. No. 882,159
Claims priority, application U.S.S.R., Mar. 1, 1977, 2463246
Int. Cl.[2] C10B *39/02*
U.S. Cl. 201—39 **3 Claims**

1. A dry coke quenching process comprising the steps of preheating said coke to a temperature of not lower than 1200° C., cooling said coke to a temperature of not lower than 700°

C. by way of passing therethrough a flow of a mixture consisting essentially of hydrocarbons and water vapor, subsequently



cooling said coke to a temperature of not higher than 200° C. by passing therethrough a flow of inert gas.

4,211,608

COKE PUSHING EMISSION CONTROL SYSTEM

Daniel Kwasnoski, Hellertown, and Carl R. Symons, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 837,071, Sep. 28, 1977, abandoned. This application Oct. 19, 1978, Ser. No. 952,917

Int. Cl.[2] C10B *39/14, 45/00, 57/00*

U.S. Cl. 201—41 **99 Claims**

1. A method for controlling coke oven emissions comprising the steps of:

(a) aligning a one-spot, open-top coke quenching car with the coke oven,

(b) providing a coke guide from the coke oven to the car,

(c) positioning a fume hood over the car, with the fume hood having a length about equal to the length of the car,

(d) pushing hot coke from the coke oven through the coke guide and into the car,

(e) withdrawing gases from the fume hood during step (d) and passing said gases to gas cleaning equipment at a gas flowrate of between about 1000 and about 3500 scfmd per ton of coke pushed under step (d), and

(f) substantially upon completion of step (e) moving the car from under the fume hood to a quenching station with the hot coke in the car exposed to the atmosphere and without further withdrawal of gases from the hot coke to the gas cleaning equipment.

4,211,609

APPARATUS FOR DESALINATING WATER

Richard E. Diggs, 12A Road, Carthage, Mo. 64836

Division of Ser. No. 625,850, Oct. 28, 1975, Pat. No. 4,118,283. This application Jan. 12, 1978, Ser. No. 869,000

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.[2] C02B *1/04;* **B01D** *3/10;* **F24J** *3/02*

U.S. Cl. 202—176 **4 Claims**

1. A distillation device comprising:

a first water transfer means for withdrawing contaminated water from a body of water having solid contaminants dissolved therein;

a grid connected to said first water transfer means so that contaminated water received from said body of water flows across said grid, said grid having an outer peripheral edge and an inner peripheral edge and comprising a header located on said grid outer peripheral edge and fluidly connected to said first water transfer means so that contaminated water flows into said header from the body of water, said header being fluidly attached to said grid so that contaminated water flows from said header onto said grid whereby contaminated water flows from the body of water to said grid via said header, and a trough located on said grid inner peripheral edge and fluidly attached to said grid so that contaminated water flows into said trough from said grid, and means for transferring solar energy to said water flowing across said grid;

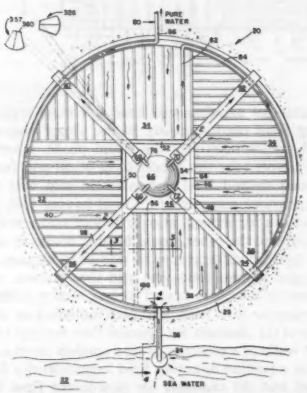
a water storage means having a side wall attached to said grid trough so that contaminated water flowing on said grid flows into said water storage means via said trough;

second water transfer means connected with said water storage means for removing contaminated water from said storage means;

a third water transfer means located in said trough and connected to said water storage means for transferring water from said trough to said water storage means and temperature control means connected to said third water transfer means for actuating said third water transfer means when the temperature of said water in said trough reaches or exceeds said predetermined temperature so that only water having a temperature which equals or exceeds said predetermined temperature is transferred to said water storage means;

a heat exchange structure connected to said water storage means;

a recirculation apparatus mounted in said trough and connected to said header for recirculating said water from said trough back to said header prior to transferring water



from said trough into said water storage means and temperature control means connected to said recirculation apparatus for actuating said apparatus when the temperature of said water in said trough falls below a predetermined temperature;

a vaporizer means connected to said heat exchange structure for separating said water from said solid contaminants dissolved therein, said vaporizer means having a solar concentrator means for transferring solar energy to said contaminated water flowing from said heat exchange structure into said vaporizer means;

vacuum producing means for producing a vacuum in said vaporizer means so that said contaminated water is vaporized under vacuum conditions to form water vapor and thereby separate said water from said solid contaminants, and solid removing means connected to said vaporizer means for removing said solid contaminants from said vaporizer means;

water vapor transfer means connected to said vaporizer means for removing said water vapor from said vaporizer means;

condenser means connected to said water vapor transfer means for condensing said water vapor to form distilled water which is free of solid contaminants; and

distillate transfer means connected to said condenser means

for withdrawing condensed water from said condenser means; and

mounting means on the distillation device for mounting the solar concentrator adjacent the distillation device;

first reflecting means attached to said mounting means;

second reflecting means attached to said mounting means; and

said first and second reflector means being oriented to reflect solar energy to the vaporizing means for raising the temperature of the water contained in the vaporizing means.

4,211,610

APPARATUS FOR HEAT AND MASS TRANSFER

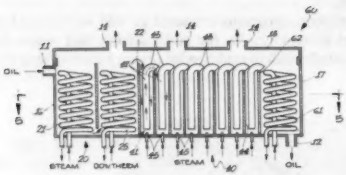
Raymond J. McGowan, Markham, Canada, assignor to The Cambrian Engineering Group Limited, Mississauga, Canada

Filed Sep. 26, 1973, Ser. No. 400,767

Claims priority, application Canada, Oct. 12, 1972, 153753

Int. Cl.[2] B01D *3/02*

U.S. Cl. 202—177 **2 Claims**



2. Apparatus for simultaneous heat and mass transfer between a first fluid predominantly in the vapor phase and a second fluid predominantly in the liquid phase, wherein the apparatus is adapted for the deodorizing of oil and fat which constitutes said second fluid and wherein said first fluid is steam, the apparatus comprising a vessel having first, second and third sections for sequential overflow of said second fluid from one section to the other, liquid heating means in said first section and liquid cooling means in said third section, means introducing said second fluid into said first section, vertical walls and conduit members in said second section defining an extended serpentine flow path, said path including an alternating sequence of (a) channels for upward flow formed between spaced apart walls of a plurality of said conduit members each terminating in a portion directing fluid longitudinally forward in said vessel and (b) channels for downward flow formed between the walls and conduit members, and steam injection means located adjacent the foot of the channels to cause upward flow of said second fluid in said path with a major component of said flow therein being in a vertical direction.

4,211,611

COKE OVEN COAL CHARGING DEVICE

Janos Bocsanczy, and Dieter Stalherm, both of Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still, Recklinghausen, Fed. Rep. of Germany

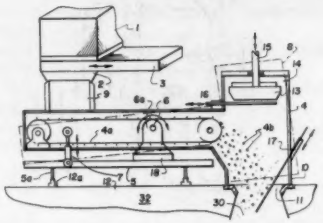
Filed Feb. 1, 1979, Ser. No. 8,517

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2804935

Int. Cl.[2] C10B *31/04*

U.S. Cl. 202—262 **8 Claims**

1. A device for charging coke into a plurality of coke ovens arranged in a coke oven battery having a roof, each of said coke ovens having a chamber and a charging chute which is openable at the roof wherein coal is supplied above the roof through a transferring chute which is openable to discharge the coal, comprising a transfer conveyor housing having a coal receiving connection adapted to be aligned with the transferring chute and a coal discharge connection alignable with the charging chute of the oven and which is located at a laterally spaced location from said coal receiving connection, conveyor means in said housing between said coal receiving connection and said discharge connection for conveying coal therebetween, pivot means supporting said housing for pivotal movement at least about a substantially horizontal axis, and drive



means connected to said housing for moving said housing to simultaneously align and sealingly connect said coal receiving connection of said housing with said transferring chute and said coal discharge connection of said housing with said coal charging chute.

4,211,612

DEVICE FOR COLLECTING EMISSIONS RISING FROM A QUENCHING CAR OF A BATTERY OF COKE OVENS

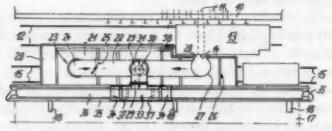
Wilhelm Stog, Waltrop, Fed. Rep. of Germany, assignor to WSW Stahl- und Wasserbau GmbH, Waltrop, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 925,380

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 7722885

Int. Cl.[2] C10B *27/04, 39/00*

U.S. Cl. 202—263 **7 Claims**

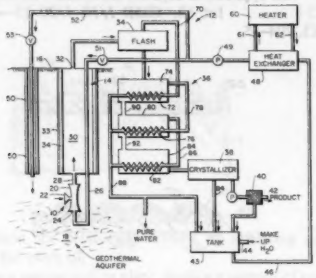


1. In combination with a displaceable quenching car of a battery of coke ovens disposed side by side in a row with doors in their front ends and having a coke guide car for selective positioning in front of the ovens to receive coke therefrom, and a collecting main for collecting smoke and gases emitted during the door removal and pushing of coke from said battery, said collecting main extending coextensively with said battery and including a continuous flexible belting forming a portion of one side thereof, a device which includes: a first elongated hood for receiving emissions rising from said quenching car, a collector mounted above said first hood and extending in the longitudinal direction of said first hood, duct means arranged at one end portion of said first hood and extending from said first hood to said collector for conveying emissions from said first hood to said collector, an adjustable throttle valve associated with said duct means for controlling the passage of emissions therethrough, a connecting piece connected to the other end portion of said collector, a second hood extending over said coke mass transporting carriage, and provided with an opening adapted to be aligned with said connecting piece, and wighdrawal duct means connected to said collector at an intermediate portion between said duct means and said connecting piece which withdrawal duct means are adapted to communicate with said collecting main and provided with a shut-off flap operable to control the communication between said collector and said collecting main.

4,211,613
GEOTHERMAL MINERAL EXTRACTION SYSTEM

Milton Meckler, 16348 Tupper St., Sepulveda, Calif. 91343

Filed Nov. 28, 1977, Ser. No. 855,358
Int. Cl.[2] C02B 1/04
U.S. Cl. 203—11 25 Claims



1. A system for recovering geothermal brines comprising in combination:

a geothermal well having a first end adjacent the surface and a second end disposed within a wet geothermal aquifer containing hot saline geothermal brine;

brine eductor means disposed at said second end comprising a venturi having a first inlet receiving a high velocity flow of dilute saline carrier solution, a nozzle inlet into which a flow of said geothermal brine is educted, mixing means receiving said flow of solution and flow of geothermal brine from said inlets to form a recovery mixture having a saline content lower than that of said brine and an outlet communicating the mixture with the interior of said well;

first conduit means within said well for delivering said high velocity flow of solution to said first inlet; and

second means within said well for delivering said mixture from said outlet to the surface.

11. A method of recovering geothermal brine from a geothermal aquifer comprising the steps of:

establishing a high velocity flow of a carrier solution having a lower salt concentration than the brine from the surface into a geothermal well having a lower end disposed within the aquifer;

flowing the solution through the well through a venturi having a nozzle communicating with the aquifer so that brine is educted from the aquifer into the solution to form a recovery mixture; and

delivering the mixture through the well to the surface.

4,211,614
ENDPOINT DRIFT CORRECTION FOR AUTOMATIC TITRATIONS

Lee B. Eppstein, Northport, N.Y.; James K. Kroeger, Glen Ridge, N.J., and Kenneth A. Lindblom, Harrison, N.Y., assignors to Photovolt Corporation, New York, N.Y.

Filed May 30, 1978, Ser. No. 910,174
Int. Cl.[2] G01N 27/44
U.S. Cl. 204—1 T 10 Claims

1. In an automatic titrator comprising titration means for introducing a titrant into a titration mixture, endpoint detection means for detecting the endpoint of the titration, means responsive to the endpoint detection means for controlling the titration means to introduce titrant when the titration mixture is not at the endpoint, and titrant measuring means for measuring the amount of titrant introduced, the improvement which comprises;

(a) timer means for measuring the titration time until the titration mixture first reaches an initial endpoint,

(b) means responsive to one of the endpoint detection means and the titration means for detecting introduction of titrant during a predetermined post-titration time period after the initial endpoint;

(c) means for measuring the amount of titrant introduced during a subsequent post-titration time period after the initial endpoint, said subsequent time period beginning with the detection of titrant introduction by means (b), and ending with a predetermined subsequent introduction of titrant; and

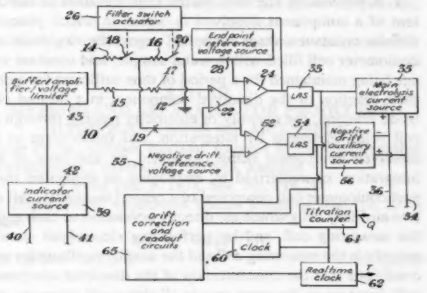
(d) means including a timer for measuring the duration of said subsequent post-titration period, said time and amount measurements by means (c) and (d) being indicative of the drift rate during the titration, and the drift rate and the titration time measured by means (a) being indicative of the amount of drift.

7. A method for correcting positive drift in a titration or a titration mixture, comprising

generating a signal Q corresponding to the amount of titrant introduced into the titration mixture;

generating a time signal T corresponding to time elapsed from beginning of the titration;

introducing titrant continuously until a predetermined end-



point condition is detected, and thereafter reintroducing titrant periodically as needed to maintain the reaction mixture at the endpoint condition;

storing the Q and T signals as Q_{titr} and T_{titr} at the time the endpoint is first reached;

when no additional titrant is introduced during a predetermined time interval after the endpoint is first reached, determining the titration result from Q_{titr}; and

when additional titrant is introduced during said interval, generating a drift rate signal DR corresponding to the difference between (i) the Q signal at the time T_{C_0} of an additional titrant introduction (Q_{C_0}) and the Q signal at the time T_{C_1} of a predetermined later additional titrant introduction (Q_{C_1}) divided by (ii) the difference in time ($T_{C_1} - T_{C_0}$) between said introductions;

generating a correction signal Q_{corr} corresponding to the product of the drift rate signal DR and the stored T_{titr} signal, said correction signal thus corresponding to the amount of titrant consumed by drift during the initial titration; and

determining the titration result from the difference between the stored T_{titr} signal and the T_{corr} signal.

4,211,615
PROCESS AND A MEASURING CELL FOR THE COULOMETRIC DETERMINATION OF THE CONTENT OF A COMPONENT DISSOLVED IN WATER

Rolf O. Hallberg, Skolvagen 11A, 135 00 Tyreso; Carl H. M. Lindstrom, Sandelsgatan 10, 115 33 Stockholm, and Hakan Westerberg, Paskvagen 32, 421 53 Vastra Frolunda, all of Sweden

Filed May 2, 1979, Ser. No. 35,383
Int. Cl.[2] G01N *27/42*
U.S. Cl. 204—1 T 3 Claims

1. A process for the coulometric determination of the content of a component dissolved in water, in which process a definite constant voltage is applied across the electrodes of a coulometer cell filled with a water sample, said constant voltage being maintained for a period of time sufficient for a complete reaction of the dissolved component in a desired electrode reaction, the quantity of electricity passing through the cell being measured by integration, and the content of the dissolved component being calculated on the basis of said integration, characterized by employing an elongated three-part coulometer cell composed of a central measuring cell and two auxiliary cells which are directly connected to each end of the measuring cell, and by performing electrolysis simultaneously in the measuring cell and the auxiliary cells under such conditions that the concentration of the dissolved component will decrease at the same rate in all three cell elements, two such electrolyses being performed with the same integration time in order to correct for temperature and salt content dependence and for charging of the electric double layer.

2. A coulometer cell for the coulometric determination of the content of a component dissolved in water, characterized in that it consists of an elongated central measuring cell which has both of its ends directly connected each to one of two elongated auxiliary cells, each of the measuring and auxiliary cells being provided with an anode and a cathode in the form of electrically conducting wires, said wires being parallel inter se and extending in the longitudinal direction of the respective cell elements.

4,211,616
ELECTROCHROMIC PRINTING SYSTEM

Carlos J. Sambucetti, Croton-on-Hudson, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

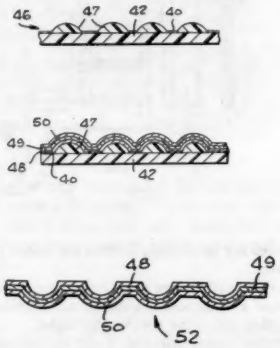
Filed May 24, 1979, Ser. No. 42,177
Int. Cl.[2] G01D *15/06, 15/34*
U.S. Cl. 204—2 18 Claims

1. An aqueous electrochromic printing fluid comprising
(a) an iodide compound as a color forming agent;
(b) a bromide compound to catalyze an electro-oxidation of said iodide compound;
(c) a compound which forms a clathrate complex with iodine formed from the electro-oxidation of said iodide compound; and
(d) a discoloration inhibiting compound.

4,211,617
PROCESS FOR PRODUCING A STAMPER FOR VIDEODISC PURPOSES

Csaba K. Hunyar, Los Angeles, Calif., assignor to MCA Disco-Vision, Inc., Los Angeles, Calif.

Continuation of Ser. No. 552,249, Feb. 24, 1975, abandoned.
This application Sep. 21, 1978, Ser. No. 944,499
Int. Cl.[2] C25D *1/10, 1/20*
U.S. Cl. 204—5 2 Claims

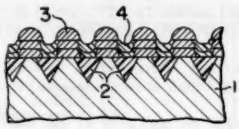


1. A process for producing a video disc member from which a plurality of replica video discs can be formed, and for producing a video disc member for use as an intermediate product from which additional stamper and die members can be formed, said process comprising the steps of:
providing a body having an upper surface carrying indicia of the video information to be produced, and said upper surface being substantially flat for establishing a substantially planar surface in the resulting replica member suitable for reflecting light incident thereupon, and said upper surface having discontinuities out of the plane of the surface for scattering light incident thereupon, and each of said discontinuities being separated by a flat portion of said upper surface, and said discontinuities and flat surface portions being arranged in a video information track, each discontinuity having a constant dimension in the radial direction and a constant maximum dimension in the direction perpendicular to said surface, the length of each discontinuity in the circumferential direction and the distance between adjacent discontinuities in the circumferential direction representing the video information to be reproduced;
forming a silver layer upon said upper surface and said discontinuities to a thickness sufficient to support electroconductivity in a subsequent electroplating bath and said thickness lying within the range of 0.01 mil to 2 mils;
electroplating a copper layer upon said exposed surface of said silver layer to a thickness sufficient for forming a self supporting member having a thickness lying within the range of 2 mils to 10 mils;
electroplating a nickel layer upon said copper layer for greater strength and support and having a thickness lying within the range of 1 mil to 10 mils; and
separating said combined first, second and third layers from said body for providing a first video disc member having a silver interface surface carrying said video information in a form complementary to the form of said video information carried by said upper surface of said body and suitable for use in reproducing replica video discs having video information in a form identical to the form carried by said body.

4,211,618
METHOD FOR MAKING SCREENS

Yoshio Ohno, Tokyo, Japan, assignor to Kabushiki Kaisha Kenseido and Toppan Printing Co. Ltd., both of Tokyo, Japan

Filed May 16, 1978, Ser. No. 906,611
Claims priority, application Japan, May 24, 1977, 52-59395
Int. Cl.[2] C25D 1/08
U.S. Cl. 204—11 6 Claims



1. A method for producing screens by a plating process comprising the steps of:

(1) plating a master roll or plate, having a pattern of conductive metal and non-conductive areas on the surface thereof, with a plurality of separate coats of a metal coating on said conductive areas in order to build up a plurality of spaced projecting metal parts having a required thickness;

(2) between each of the separate platings, applying a non-electrically conductive resin onto the entire surface of a said separate metal coating; and

(3) removing said non-electrically conductive resin from the top of each of said separate metal coatings on said projecting parts while said non-electrically conductive resin is in an undried state, said removal being performed by means of a roll comprised of a natural or synthetic rubber receptive to said non-electrically conductive resin, so as to expose the surface of said metal coating.

4,211,619
PROCESS FOR ANODICALLY OXIDIZING ALUMINUM AND USE OF THE MATERIAL SO PREPARED AS A PRINTING PLATE SUPPORT

Gerhard Usbeck, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,076
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811396
Int. Cl.[2] C25D 11/16, 11/18
U.S. Cl. 204—33 4 Claims

1. In the process for anodically oxidizing materials in the form of strips, foils, or sheets comprised of aluminum or aluminum alloys in an aqueous electrolyte containing sulfuric acid and aluminum ions, if appropriate, after a foregoing mechanical, chemical, or electrochemical roughening,

the improvement comprising anodically oxidizing the material in an electrolyte having a concentration of sulfuric acid in the range of about 25 to 100 g per liter and of aluminum ions in the range of about 10 to 25 g per liter, at a current density in the range of about 4 to 25 A/dm^2, and a temperature in the range of about 25° to 65° C.

4,211,620
METHOD OF AND APPARATUS FOR PRODUCING HYDROGEN AND OXYGEN BY PHOTOELECTRICALLY-INDUCED ELECTROLYSIS

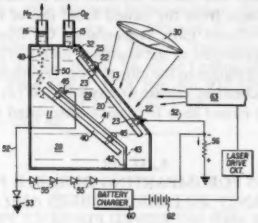
Herbert Fowler, Lexington, Ky., assignor to Childers-Fowler Research and Development Company, Lexington, Ky.

Filed Jun. 1, 1979, Ser. No. 44,650
Int. Cl.[2] C25B 1/04, 9/00, 9/04
U.S. Cl. 204—129 20 Claims

1. A method of producing hydrogen and oxygen from an electrolytic solution in an electrolytic cell comprising the steps of:

forming a relatively thin layer of the electrolytic solution on an anode;

passing light through the relatively thin layer to ionize the electrolytic solution in the relatively thin layer to form oxygen adjacent the anode and to heat the solution in the layer;



circulating the fluid in the electrolytic cell due to heating of the relatively thin layer to move the solution past a cathode electrically connected to the anode,

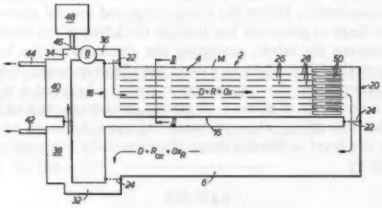
preventing current from flowing from between the cathode and anode until the potential reaches a predetermined threshold thereby generating hydrogen gas at the cathode, and

collecting the hydrogen gas as the gas forms at the cathode.

4,211,621
METHOD AND APPARATUS FOR PRODUCING HYDROGEN USING SOLAR ENERGY

George Porter, London, England, assignor to National Research Development Corporation, London, England

Filed Jun. 9, 1978, Ser. No. 914,241
Claims priority, application United Kingdom, Jun. 10, 1977, 24404/77
Int. Cl.[2] B01J 1/10
U.S. Cl. 204—157.1 R 26 Claims



22. A method for the collection of solar energy by photo-oxidation of water and for the conversion of such energy into a chemical fuel, which method comprises: (i) forming an aqueous solution of an absorbing substance D, a reducing substance R and an oxidising substance Ox, the substances D R and Ox being chosen so that upon irradiation by sunlight dissociation and photo-oxidation of water takes place as a result of D absorbing light and the resultant excited state of D reacting with R, Ox and water to oxidise to R to R_{Ox} and reduce Ox to Ox_R; (ii) causing the said aqueous solution to circulate in one direction around the closed loop of a unidirectional, continuous flow solar energy collection apparatus while irradiating the solution with incident sunlight to thereby cause said photo-oxidation of water; the said solar energy collection apparatus comprising a closed loop through which, in use, an aqueous solution is continuously circulated in one direction only and is impinged upon by incident sunlight while circulating the aque-

ous solution continuously in one direction around the closed loop, an inlet for introducing reactants into the closed loop, at least one first station comprising means for regenerating Ox from Ox_R with liberation of hydrogen as chemical fuel, an optional at least one second station comprising means for regenerating R from R_{Ox} with concomittant release of oxygen, the said first and second stations being interposed in the closed loop in a manner such that the said aqueous solution flows through the first and second stations, and an outlet for withdrawing products from the closed loop; (iii) at the said first station in the closed loop, regenerating Ox from Ox_R with liberation of hydrogen as the chemical fuel; (iv) optionally at the said second station in the closed loop, regenerating R from R_{Ox} with concomitant release of oxygen; and (v) introducing water into the closed loop to replace dissociated water.

4,211,622

PROCESS FOR IMPARTING DURABLE FLAME RETARDANCY TO FABRIC, FIBERS AND OTHER MATERIALS AND IMPROVED PRODUCT PRODUCED THEREBY

Sam V. Nablo, Lexington, Mass., assignor to Energy Sciences Inc., Burlington, Mass.

Continuation of Ser. No. 535,856, Dec. 23, 1974, abandoned. This application Jan. 13, 1977, Ser. No. 759,024

Int. Cl.[2] **C08L** *3/00, 5/00*

U.S. Cl. 204—159.12 **6 Claims**

1. A process for grafting a fire-retarding additive selected from the group consisting or phosphorus-rich and halogen-rich fire-retarding compounds to a flammable fibrous fabric selected from the group consisting of nylon, polyester, and cellulosic materials, that comprises, applying to the fabric a solution of the additive and an effective amount of a copolymerization-grafting compound for effecting copolymerization with the additive, with the solids content of the solution selected to correspond to a predetermined desired add-on level within the range of substantially 15–40% by weight, at least partly drying the fabric by evaporating moisture therefrom to improve the graft efficiency, irradiating the fabric, so treated, with an electron curtain beam substantially perpendicular to the fabric for uniformity of irradiation, with the energy of the beam adjusted to an energy level within the range of substantially 50–250 keV and considerably below the energy required for the electrons of the beam to penetrate the average thickness of the material constituting the fabric, scattering the electrons of the beam between the fabric fibers to extend the effective range of electron penetration, moving the fabric past the beam at a speed within the range of about 7–50 meters per minute, and adjusting the dose of the electron beam radiation delivered to the fabric to a level within the range of substantially 2–5 megarads.

4,211,623

HALIDE ELECTRODE

James W. Ross, Jr.; Charles E. Amass, both of Cambridge; Charles S. Baer, Lynn, and Martin H. Thomae, Watertown, all of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Filed Dec. 27, 1978, Ser. No. 973,567

Int. Cl.[2] **G01N** *27/30;* **B22F** *3/02*

U.S. Cl. 204—195 M **11 Claims**

1. An electrochemical electrode sensitive to halide ion X^- in solution and comprising:

a substantially imporous membrane composed of a mixture of a solid amalgam of gold and mercury with a finely divided mercurous halide salt in the form Hg_2X_2; and

means for forming an electrical contact with one surface of said membrane at a substantially fixed potential.

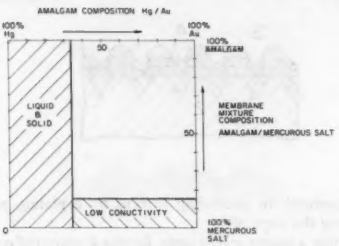
8. A method for producing an ion-sensitive membrane for an electrochemical electrode comprising the steps of:

intimately mixing a solid amalgam of gold and mercury with a finely divided mercurous halide salt selected from the group consisting of mercurous chloride, mercurous bromide, and mercurous iodide; and

compressing said mixture with sufficient force to render it a substantially imporous mass.

11. A method of producing an electrochemical electrode sensitive to halide ions in solution comprising the steps of:

intimately mixing a solid amalgam of gold and mercury with



a finely divided mercurous halide salt selected from the group consisting of mercurous chloride, mercurous bromide, and mercurous iodide;

compressing said mixture with sufficient force to render it a substantially imporous mass;

forming a membrane from said mass; and

forming an electrical contact with one surface of said membrane at a substantially fixed potential.

4,211,624

MATERIAL FOR PRODUCING PYROMETRIC REFRACTORY COMPONENTS, PYROMETRIC REFRACTORY COMPONENT, AND PROCESS FOR PRODUCING SAME

Novella V. Semkina, ulitsa Bljukhera, 71, korpus 1, kv. 38, Sverdlovsk; Galina S. Bokach, ulitsa Borovaya, 13, kv. 7, Kamyshlov Sverdlovskoi oblasti, and Ivan V. Zinkovsky, Sevastopolsky prospekt, 12, korpus 3, kv. 9, Moscow, allof, U.S.S.R.

Filed Mar. 2, 1979, Ser. No. 16,967

Int. Cl.[2] **C05B** *35/48;* **G01N** *27/58*

U.S. Cl. 204—195 S **4 Claims**

1. A material for producing pyrometric refractory components, comprising the following ingredients in, % by weight with the total percentage of such ingredients adding up to 100%:

alumina	65 to 83
titanium dioxide	60 to 10
zirconium dioxide	11 to 25

2. A pyrometric refractory component produced from said material claimed in claim 1.

3. A pyrometric refractory component as claimed in claim 2, made in the form of a tube with a sealed end, the outside diameter-to-length ratio being 1:10 to 1:13 and the inside diameter-to-outside diameter ratio being 1:2 to 1:4.

4. A process for producing pyrometric refractory components, comprising the following steps:

mixing of finely divided ingredients taken in the following ratio, % by weight:

alumina	65 to 83
titanium dioxide	6 to 10
zirconium dioxide	11 to 25;

with the total percentage of such ingredients adding up to 100%;

introduction of a plasticizing additive into the resulting mixture;

moulding of said components;

initial firing at a temperature of 1,200° to 1,300° C. to completely remove said plasticizing additive and partially strengthen said components;

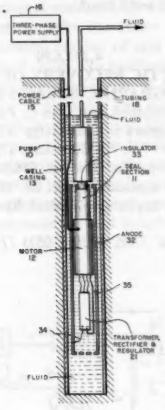
final firing at a temperature of 1,650° to 1,720° C. to impart the required strength to said components.

4,211,625

IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM FOR SUBMERSIBLE DOWNHOLE PUMPING ASSEMBLY

Joseph E. Vandevier, Broken Arrow, and Larry E. Hocutt, Tulsa, both of Okla., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 11, 1978, Ser. No. 941,629
Int. Cl.² C23F *13/00*
U.S. Cl. 204—197 **1 Claim**



1. An impressed current cathodic protection system for a deep well submersible downhole pumping assembly having a pump, a seal section and a three-phase motor each of which is encased in a respective one of three metal housings in contact with the fluid in the well, the pump having internal metal surfaces also in contact with the well fluid, and wherein a three-phase AC power supply, located at the surface above the well, couples to and energizes the three-phase motor in the downhole pumping assembly, said protection system comprising:

DC supply means, mounted below the downhole pumping assembly and having positive and negative terminals, and including a three-phase transformer for coupling the windings of the three-phase motor to a rectifier in order to rectify AC voltages derived from the motor windings to provide a DC voltage across said positive and negative terminals;

means for electrically connecting said negative terminal of said DC supply means to the three metal housings, in which the pump, seal section and motor are encased, and also to the internal metal surfaces of the pump;

a tubular shaped sacrificial anode mounted to said downhole pumping assembly and encompassing and spaced from the seal section and the three-phase motor, said anode being constructed to permit the well fluid to flow within said anode and over the metal housings of the seal section and motor;

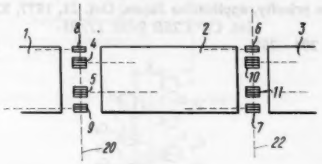
and means for electrically connecting said positive terminal of said DC supply means to said sacrificial anode, current thereby flowing from said anode and through the well fluid to the three metal housings and to the internal metal surfaces of the pump to protect the metal housings and metal surfaces against corrosion.

4,211,626

DUAL CURRENT SUPPLY SYSTEM FOR ALUMINUM-PRODUCING ELECTROLYZERS

Nikolai A. Kaluzhsky, Sredny prospekt, 6, kv. 23; Ilya G. Kil, ulitsa Gavanskaya, 37, kv. 61; Vladimir P. Nikiforov, ulitsa Nalichnaya, 49, kv. 8; Vasily I. Nosikov, Moskovsky prospekt, 205, kv. 455; Alexandr N. Smorodinov, ulitsa Bukharestskaya, 31, korpus 3, kv. 55; Mikhail V. Yazev, Kirovksy prospekt, 42b, kv. 65, and Igor K. Tsybukov, Tikhoretsky prospekt, 9, korpus 10, kv. 54, all of Leningrad, U.S.S.R.

Filed Jun. 7, 1978, Ser. No. 913,328
Int. Cl.² C25C *3/16*
U.S. Cl. 204—243 M **4 Claims**



1. A dual system of current supply buses for aluminum-producing electrolyzers arranged transversely in a row in spaced relation with each other, said system having a plurality of anode risers in each space between next-adjacent electrolyzers, anode systems and anode buses electrically connected to the anode risers for supplying current from said anode risers to said anode systems,

at least two anode risers of one of a pair of next-adjacent electrolyzers being coplanarly positioned in the space between said next-adjacent electrolyzers, and

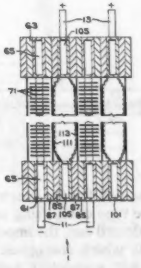
at least two anode risers of the other of said pair of next-adjacent electrolyzers being positioned in said space between said next-adjacent electrolyzers in coplanar relation with the anode risers of said one of said next-adjacent electrolyzers.

4,211,627

PERMIONIC MEMBRANE ELECTROLYTIC CELL

Hugh Cunningham, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 27, 1978, Ser. No. 928,645
Int. Cl.² C25F *9/00*
U.S. Cl. 204—252 **15 Claims**



8. An electrolytic cell comprising;

a cathodic unit;

an anode unit substantially parallel to said cathode unit and having anodic elements therein; and

a permionic membrane therebetween;

said cathode unit having a plurality of parallel, elongate, vertical blade-like cathodic elements, the cathodic elements being of greater surface area than the anode elements, said permionic membrane being nearer the anodic elements than the cathodic elements—and spaced from said anodic elements by a spacing element interposed between said anodic elements and said permionic membrane.

4,211,628

ELECTROLYTIC BATH ASSEMBLY

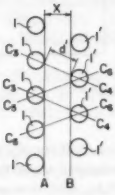
Kanichiro Obata, Matsudo; Yoshikazu Kokubu, and Isao Okazaki, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1978, Ser. No. 944,356

Claims priority, application Japan, Oct. 21, 1977, 52/126476

Int. Cl.[2] C25B *9/00, 11/03*

U.S. Cl. 204—252 **5 Claims**



1. An electrolytic bath vessel assembly, characterized by the provision of two electrode groups as an anode and a cathode arranged at the both sides of a fine-pored separating membrane, each of said groups comprising a number of equidistantly parallely arranged bar electrodes, preferably round bars, said two electrode groups being positioned in an opposed state relative to each other, wherein the anodic and cathodic bar electrodes are arranged in a zigzag arrangement.

4,211,629

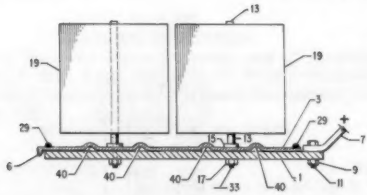
ANODE AND BASE ASSEMBLY FOR ELECTROLYTIC CELLS

Hugh L. McCutchen, Florence Ala., and James W. Bess, Sr., Painesville, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Feb. 12, 1979, Ser. No. 11,415

Int. Cl.[2] C25B *9/04, 11/02, 11/10*

U.S. Cl. 204—252 **10 Claims**



1. In an electrolytic cell for the electrolysis of alkali metal halide solutions of the type comprising an anode and cell base assembly and a cathode cell can, the improvement in the anode and cell base assembly which comprises:

(a) A conducting and supporting cell base means having perforations disposed therein for receipt of anode risers;

(b) A substantially electrically nonconductive metal cell base cover having an outer surface and an inner surface facing said cell base, said cell base cover covering the entire upper surface of said cell base, having perforations disposed therein corresponding to said perforations in said cell base;

(c) Dimensionally stable anodes, each of said anodes comprising an electrically conductive surface, a material supporting said electrically conductive surface and an anode riser having a downwardly facing annular surface on the lower portion thereof at least a portion of said annular surface in contact with said outer surface of said cell base cover and a connecting post extending past said annular surface and through said perforations in said metal cell base cover and said cell base, and

(d) A circumferential weld bead extending between each said annular surface and the periphery of each said perforation in said cell base cover, whereby said flange, anode riser and metal cell base cover comprise a unitary structure and a hydraulically impermeable seal is created between each said annular surface and said metal cell base cover by said weld bead.

4,211,630

ELECTROLYTIC RECOVERY OF SILVER FROM PHOTOGRAPHIC BLEACH-FIX BATHS

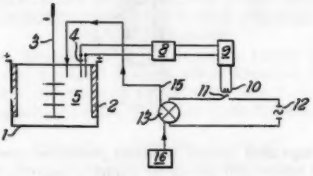
Colin C. Blake, Rochford, and Ivan C. Payne, Brentwood, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 934,302, Aug. 17, 1978, which is a continuation-in-part of Ser. No. 586,836, Jun. 13, 1975, abandoned. This application Apr. 23, 1979, Ser. No. 32,813

Claims priority, application United Kingdom, Jun. 26, 1974, 28330/74

Int. Cl.[2] C25C *7/06, 1/20;* **G05D** *11/08;* **G03C** *5/38*

U.S. Cl. 204—275 **4 Claims**



1. Apparatus for recovering metallic silver from bleach-fix baths which comprises an electrolytic cell having a cathode on which reduced silver ions can deposit, a platinum plus calomel pair of electrodes for measuring the redox potential of the bleach-fix solution, a milli-volt meter connected to the platinum plus calomel pair of electrodes for indicating the redox potential of the bleach-fix solution in milli-volts, a potentiostat connected to the milli-volt meter and to which is connected a solenoid, together with an electrical circuit which comprises a relay which can be actuated by the said solenoid, a source of electric voltage and a pump which operates continuously when the said circuit is made but stops when the said circuit is broken, a tank for holding an aqueous solution of a reducing agent and supply means joining the tank to the pump and the pump to the electrolytic cell.

4,211,631

COAL LIQUEFACTION PROCESS EMPLOYING MULTIPLE RECYCLE STREAMS

Norman L. Carr, Allison Park; Ronald Schleppy, Jr., Pittsburgh, and Yatish T. Shah, Pittsburgh, all of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Jul. 3, 1978, Ser. No. 921,339

Int. Cl.[2] C10G *1/00, 1/06;* **C10J** *3/00, 3/16*

U.S. Cl. 208—8 LE **24 Claims**

1. A combination coal liquefaction-gasification process com-

prising passing hydrogen and a liquefaction zone feed slurry comprising mineral-containing feed coal, recycle dissolved liquid coal solvent, recycle dissolved coal which is solid at room temperature and recycle mineral residue to a coal liquefaction zone to dissolve hydrocarbonaceous material from mineral residue and to hydrocrack said hydrocarbonaceous material to produce a liquefaction zone effluent mixture comprising hydrocarbon gases, dissolved liquid coal, solid dissolved coal and suspended mineral residue; recycling to said liquefaction zone feed slurry a portion of said dissolved liquid coal, solid dissolved coal and mineral residue; recycling to said liquefaction zone an other portion of said solid dissolved coal and mineral residue independently of said liquefaction zone feed slurry; said liquefaction zone producing a greater net yield on a weight basis after recycle of 450° to 850° F. dissolved liquid coal as compared to the net yield on a weight basis after recycle of 850° F.+ solid dissolved coal; separating dissolved liquid coal and hydrocarbon gases from non-recycled solid dissolved coal and mineral residue to produce a gasifier feed slurry comprising substantially the entire net yield of solid dissolved coal and mineral residue of said liquefaction zone; passing said gasifier feed slurry to a gasification zone including an oxidation zone for the conversion of the hydrocarbonaceous material therein to synthesis gas; converting at least a portion of said synthesis gas to a gaseous hydrogen-rich stream and passing said hydrogen-rich stream to said liquefaction zone to supply process hydrogen thereto; the amount of hydrocarbonaceous material passed to said gasification zone being sufficient to enable said gasification zone to produce at least the entire hydrogen requirement of said liquefaction zone.

4,211,632

METHOD FOR HEAT PROCESSING OF PULVERIZED BROWN COAL

Zinovy F. Chukhanov; Anatoly M. Nikolaev; Vadim A. Karasev; Elizaveta A. Shapatina; Zinovy Z. Chukhanov; Galina P. Zybalova; Nikolai A. Fedorov, and Sergei A. Tsuprov, all of Moscow, U.S.S.R., assignors to Gosudarstvenny Nauchno-Issledovatelsky Energeticheskiy Institut Imeni G.M. Krzhizhanovskogo, U.S.S.R.

Filed Aug. 14, 1978, Ser. No. 933,526

Int. Cl.² C10G *1/00*

U.S. Cl. 208—8 R **5 Claims**

1. Method of heat processing pulverized brown coal, which comprises heating pulverized brown coal in a first stage by a gaseous heat carrier in less than one second to a temperature of 200°–500° C. at which thermal decomposition thereof begins, separating the gaseous heat carrier from the thus heated brown coal, further heating the thus heated brown coals in a second stage in less than one second to a temperature of 500°–800° C. at which temperature thermal decomposition of the brown coal takes place by means of a stream of gaseous heat carrier which has been supplied with air oxygen and low grade products from the processing of pulverized brown coal, thus forming a vapour-and-gas suspension, breaking the thus formed vapour-and-gas suspension into a solid matter and a vapour-and-gas portion, condensing the vapour-and-gas portion to obtain gas, usable liquid products and to separate low-grade products including heavy tars and pyrogenic water therefrom, thereby obtaining thermally processed brown coal of high caloric capacity.

4,211,633

SEPARATION OF ASPHALTIC MATERIALS FROM HEPTANE SOLUBLE COMPONENTS IN LIQUIFIED SOLID HYDROCARBONACEOUS EXTRACTS

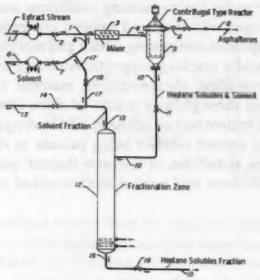
William K. T. Gleim, Seattle, Wash., assignor to Energy Modification, Inc., Gainesville, Fla.

Continuation-in-part of Ser. No. 873,115, Jan. 30, 1978, Pat. No. 4,155,833. This application Mar. 22, 1979, Ser. No. 22,818

The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.

Int. Cl.² C10C *3/00, 3/08*

U.S. Cl. 208—45 **6 Claims**



1. An improved method for maximizing the separation of the heat labile fraction of asphaltic materials in a liquified solid hydrocarbonaceous extract, which comprises the steps of:

(a) adding a solvent having a boiling range of from about 50° C. to 200° C. for the heptane solubles of said extract,

(b) effecting a mixing of said solvent and said extract and providing a pressurized centrifuging action of the combined stream in a confined pressure-tight powered centrifuging zone at a temperature in the range of about 100° C. to about 200° C. while at an elevated pressure at least sufficient to maintain the solvent material in a liquid state, whereby to separate the heavier heat labile asphaltic materials fraction from the mixture, and

(c) effecting the withdrawal of the asphaltic fraction from the centrifuging zone substantially free of the resulting solution of the heptane soluble liquified fuel extract.

4,211,634

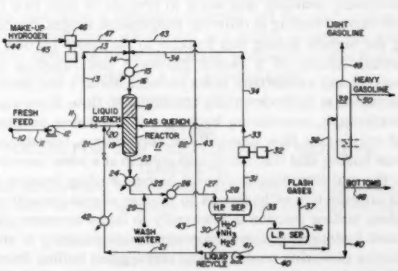
TWO-CATALYST HYDROCRACKING PROCESS

Ralph J. Bertolacini, Chesterton, Ind., and Albert P. Yu, Taipai, Taiwan, assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 13, 1978, Ser. No. 960,237

Int. Cl.² C10G *13/04, 37/02*

U.S. Cl. 208—59 **45 Claims**



1. A process for the hydrocracking of a hydrocarbon stream boiling above a temperature of about 300° F. (149° C.) and

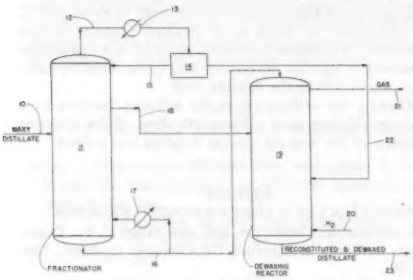
containing a substantial amount of organic nitrogen-containing compounds, which process comprises: contacting said stream in a first reaction zone under hydrocracking conditions and in the presence of hydrogen with a first catalyst comprising a hydrogenation component comprising nickel and molybdenum or nickel and tungsten and a co-catalytic acidic cracking support comprising an ultrastable, large-pore crystalline aluminosilicate material suspended in and distributed throughout a matrix of silica-alumina to provide a first hydrocracked effluent, said hydrogenation component of said first catalyst being present in the elemental form, as oxides, as sulfides, or mixtures thereof; contacting said first hydrocracked effluent in a second reaction zone under hydrocracking conditions and in the presence of hydrogen with a second catalyst comprising a hydrogenation component comprising cobalt and molybdenum and a co-catalytic acidic cracking support comprising an ultrastable, large-pore crystalline aluminosilicate material suspended in and distributed throughout a matrix of silica-alumina to provide a second hydrocracked effluent, said hydrogenation component of said second catalyst being present in the elemental form, as oxides, as sulfides, or mixtures thereof; and recovering useful products from said second hydrocracked effluent.

4,211,635

CATALYTIC CONVERSION OF HYDROCARBONS

Nai Y. Chen, Titusville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,080
Int. Cl.[2] C10G *13/04*
U.S. Cl. 208—93 **10 Claims**



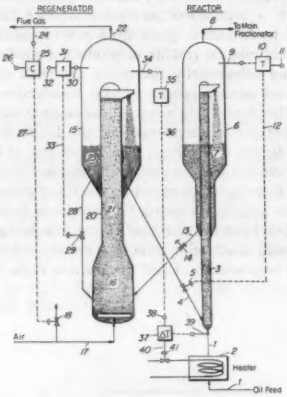
1. A process for improved shape selective catalytic hydrodewaxing of distillate lubricating oil stock which comprises fractionally distilling said stock to provide at least two fractions thereof boiling at different temperature ranges, introducing the highest boiling said fraction to the upper portion of a vertical column of a zeolite having a silica/alumina ratio above 12 and a constraint index between about 1 and about 12 maintained at hydrodewaxing conditions to flow downwardly therethrough, introducing hydrogen to the lower portion of said column for flow upwardly in said column, introducing a lower boiling said fraction to said column at a point intermediate the said introduction of said highest boiling fraction and said introduction of hydrogen to flow in admixture with said highest boiling fraction downwardly as liquid countercurrent to said hydrogen at conversion conditions resulting in shape selective dewaxing conversion of said highest boiling fraction at higher level of severity, and withdrawing from the bottom of said column reconstituted dewaxed distillate lubricating oil stock of improved viscosity index.

4,211,636

FCC CATALYST SECTION CONTROL

Benjamin Gross, and Wooyoung Lee, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 769,638, Feb. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 608,353, Aug. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 608,352, Aug. 27, 1975, abandoned. This application Aug. 7, 1978, Ser. No. 931,573
Int. Cl.[2] C10G *11/18*
U.S. Cl. 208—164 **11 Claims**



1. In a fluid catalytic cracking process for cracking a hydrocarbon oil feed stream, wherein said stream is passed through variable preheat means and then is contacted with hot regenerated catalyst in a reactor section maintained under catalytic cracking conditions to form cracked products and spent catalyst contaminated by coke; and wherein said cracked products and spent catalyst are separated in, and recovered from, said reactor section; and wherein said recovered spent catalyst is continuously circulated through a regenerator section operating in the complete CO-burning mode thereby burning said contaminating coke by contact with air and forming hot regenerated catalyst having a temperature substantially higher than said spent catalyst, said regenerator section being provided with adjustable means for recycling a portion of hot regenerated catalyst to said recovered spent catalyst; and wherein hot regenerated catalyst is recirculated to said reactor section, the method for controlling the process, whereby improving its adaptive behavior, which comprises:

comparing the temperature of the hot regenerated catalyst with a predetermined temperature to obtain a regenerated catalyst temperature deviation; and,

adjusting, within the regenerator section, the recycle of hot regenerated catalyst to spent catalyst to change the recycle ratio in a direction to reduce said temperature deviation, said recycle ratio being in the range of greater than about 1.5 to about 5 before and after said change; and

adjusting the oil preheat temperature in a direction to reduce said regenerated catalyst temperature deviation.

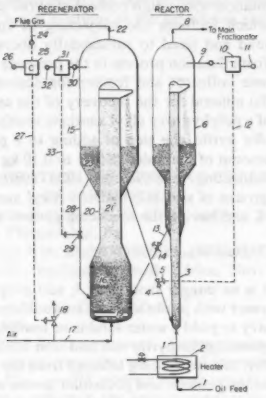
4,211,637
FCC CATALYST SECTION CONTROL

Benjamin Gross, and Wooyoung Lee, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 769,485, Feb. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 608,352, Aug. 27, 1975, abandoned. This application Aug. 7, 1978, Ser. No. 931,600

Int. Cl.² C10G *11/18*

U.S. Cl. 208—164 **8 Claims**



1. In a fluid catalytic cracking process for cracking a hydrocarbon feed stream, wherein said stream is contacted with hot regenerated catalyst in a reactor section maintained under catalytic cracking conditions to form cracked products and spent catalyst contaminated by coke; and wherein said cracked products and spent catalyst are separated in, and recovered from, said reactor section; and wherein said recovered spent catalyst is continuously circulated through a regenerator section operating in the complete CO-burning mode thereby burning said coke by contact with an oxygen containing gas and forming hot regenerated catalyst having a temperature substantially higher than said contaminated catalyst, said regenerator section being provided with adjustable means for recycling a portion of hot regenerated catalyst to said recovered spent catalyst; and wherein hot regenerated catalyst in recirculated from said regenerator section to said reactor section, the method for controlling the process, whereby improving its adaptive behavior, which comprises:

comparing the temperature of the hot regenerated catalyst with a predetermined temperature to obtain a regenerated catalyst temperature deviation; and,

adjusting, within the regenerator section, the recycle of hot regenerated catalyst to spent catalyst to change the recycle ratio in a direction to reduce said temperature deviation, said recycle ratio being in the range of greater than 1.5 to about 5 before and after said change.

4,211,638
NAPHTHA STRIPPING

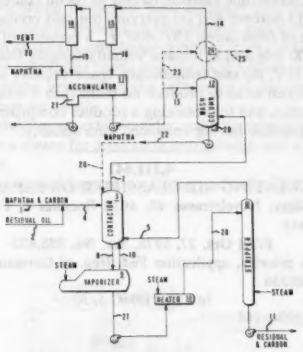
Robert B. Akell, Wilmington, Del.; Werner C. Muller, Dobbs Ferry, N.Y., and Rudolph Pick, Metuchen, N.J., assignors to Syngas Company, Deer Park, Tex.

Filed Feb. 10, 1978, Ser. No. 876,678

Int. Cl.² C10G *7/00, 21/00*

U.S. Cl. 208—180 **8 Claims**

1. In a process for recovering a light hydrocarbon liquid from a slurry of the light liquid with soot by mixing the slurry with a heavy hydrocarbon liquid, then heating and distilling the mixture in a naphtha stripper with the light liquid taken off overhead and condensed while drawing off a bottom stream composed of the heavy liquid and soot, the improvement comprising, after mixing the slurry with the heavy hydrocarbon liquid but prior to distilling the mixture in the naphtha stripper, feeding the mixture under pressure into a direct liquid-vapor contactor where the mixture is contacted with superheated, overhead vapors from the naphtha stripper, thereby converting part of the light hydrocarbon liquid into vapor, the vapors being taken off overhead and condensed, and removing the remainder of the liquid mixture from the bottom of the contactor and feeding it to the stripper.



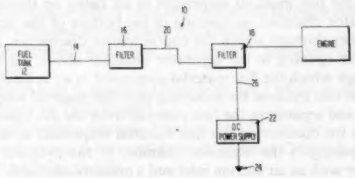
4,211,639
METHOD FOR REMOVING IMPURITIES AND RESIDUAL MOISTURE FROM PETROLEUM FUELS

Herman R. Jackson, 1981 San Marco Blvd., Jacksonville, Fla. 32207

Filed Nov. 3, 1978, Ser. No. 957,504

Int. Cl.² C10G *33/04, 33/06*

U.S. Cl. 208—188 **7 Claims**



1. A method for removing impurities and residual moisture from a petroleum fuel comprising:

(a) adding to said fuel a solid organic acid or a chromate compound; and

(b) circulating said fuel from step (a) through a filter apparatus containing a cellulosic material and the acid or chromate compound which was not added in step (a), said filter apparatus being electrically grounded or attached to an electric ground via a DC power supply.

4,211,640
PROCESS FOR THE TREATMENT OF OLEFINIC GASOLINE

William E. Garwood, Haddonfield, and Wooyoung Lee, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 24, 1979, Ser. No. 41,844

Int. Cl.² C10G *25/04*

U.S. Cl. 208—255 **16 Claims**

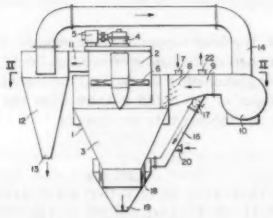
1. In the process of contacting olefinic gasoline with an

acidic crystalline aluminosilicate zeolite having a pore diameter greater than about 5 Angstroms, a silica-to-alumina ratio of at least 12, and a constraint index within the range of 1–12 at elevated temperatures, the improvement which comprises utilizing an olefinic gasoline having an olefin content of at least 50 weight percent and (a) carrying out said contact at a temperature of from about 350°–600° F., a pressure of from about 100–1,000 psig and at a space velocity ranging from about 0.2 to 10 LHSV; (b) said temperature, space velocity and pressure being chosen so as to produce no more than 5 weight percent of aromatics, and (c) obtaining a product comprising both fuel oil and gasoline having enhanced gum stability.

4,211,641
CIRCULATING AIR CLASSIFIER OR SEPARATOR

Heinz Jäger, Nevelstrasse 40, 4630 Bochum 1, Fed. Rep. of Germany

Filed Oct. 27, 1978, Ser. No. 955,623
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748336
Int. Cl.² B04C *5/30*
U.S. Cl. 209—144 **4 Claims**



1. Circulating air classifier with vertical axis having a separator chamber in which coarse matter is separated from fine material, an impeller rotatable about the vertical axis disposed in the separator chamber to aid in separating the coarse matter from the fine material suspended in air rising up through the separator chamber, an opening in the bottom of the separator chamber through which the coarse matter discharges, at least another opening in the separator chamber above the bottom through which the fine material suspended in air is discharged, at least one cyclone for receiving said fine material suspended in air and separating the fine material from the air, connecting means for conducting the fine material suspended in air from the opening in the separator chamber to the cyclone, an air blower with an air suction inlet and a pressure discharge outlet, an air return line connecting the cyclone to the suction inlet for recirculating air separated in the cyclone, the improvement comprising

(A) a funnel-shaped pre-separator chamber disposed underneath and in open communication with the separator chamber which latter extends downwardly thereby directing any air and suspended matter from the pre-separator chamber upwardly through said rotatable impeller in the separator chamber,

(B) a compressed air-line with one end connected to the pressure discharge outlet of the air blower and the other end opening into the upper part of the funnel-shaped pre-separator with air from the air-line flowing tangentially into the pre-separator,

(C) inlet means in the compressed air-line upstream from the funnel-shaped pre-separator for the introduction of feed matter, which together with air flowing from the air blower enters the pre-separator tangentially causing coarse matter to be separated from the feed matter, said air and feed matter after separation of coarse matter passing upwardly through the separator chamber to said cyclone for separating the fine material from the air, and

(D) outlet means in the lower part of the pre-separator for the discharge of the coarse matter.

4,211,642
BENEFICIATION OF COAL AND METALLIC AND NON-METALLIC ORES BY FROTH FLOTATION PROCESS USING POLYHYDROXY ALKYL XANTHATE DEPRESSANTS

Vojislav Petrovich, 1935 W. Schiller St., Chicago, Ill. 60622

Filed Jan. 5, 1979, Ser. No. 1,945
Int. Cl.² B03D *1/06*
U.S. Cl. 209—167 **2 Claims**

2. In the concentration of metallic and non-metallic minerals by froth flotation with a high content of pyrite and the like iron sulfides, which includes the subjecting of such ores when finely ground and sized to substantially liberate particles of pyrite, to froth flotation process in the presence of any suitable and adequate collector and frother for desired metallic and non-metallic mineral for the recovery of the same, and in the presence of a polyhydroxy alkyl xanthate wetting and depressing agent for pyrite, the step of adding to a pulp of mineral slurry an amount of the order of 0.01 to 0.10 kg per metric ton of a non-collecting polyhydroxy alkyl xanthate, of which hydroxyl groups of said polyhydroxy alkyl xanthates contain from 3 to 4, and having the following general formula:

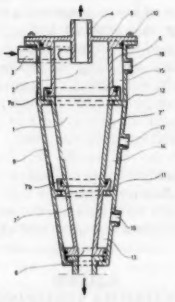
$$HOCH_2(CHOH)_mCH(CHO)OCSSK$$

wherein m is an integer from 2 to 3; said polyhydroxy alkyl xanthates, react with pyrite and said iron sulfides of the pulp of mineral slurry to yield a water soluble or insoluble hydrophilic coating depressing the pyrite and said iron sulfides, said polyhydroxy alkyl xanthates being selected from the group consisting of potassium pentose, and potassium hexose xanthates, such as potassium arabinose xanthate, potassium xylose xanthate, potassium glucose xanthate, potassium fructose xanthate.

4,211,643
HYDROCYCLONE SEPARATOR

Rune H. Frykhult, Huddinge, and Lars-Göran Rundqvist, Tumba, both of Sweden, assignors to AB Celleco, Tumba, Sweden

Filed Feb. 16, 1979, Ser. No. 13,197
Claims priority, application Sweden, Feb. 22, 1978, 7802042
Int. Cl.² B04C *5/08*
U.S. Cl. 209—211 **7 Claims**



1. A hydrocyclone separator for separating a material mixture into two fractions and comprising means forming a separation chamber having an upper portion and a downwardly tapering lower portion and also having a tangential inlet for in-feed of said material to said upper portion, means centrally located with respect to said chamber forming a first outlet from said upper portion for one of said fractions, said lower portion of the chamber tapering to a second outlet for the other of said fractions, said chamber-forming means including imperforate cylindrical wall means surrounding said upper chamber portion and imperforate conical wall means surrounding said

lower chamber portion, and means for detecting leakage from the separation chamber through said wall means including an outer shell surrounding only a single said chamber-forming means and defining therewith at least one compartment surrounding both said cylindrical and said conical wall means, said compartment being closed from said inlet and from said first and second outlets of the separation chamber, the detecting means also including means for maintaining said compartment at a lower pressure than that at the outer periphery of the separation chamber when the separator is in operation, whereby said compartment can receive leakage from both said upper and said lower portions of the separation chamber.

4,211,644

FROTH FLOTATION PROCESS AND COLLECTOR COMPOSITION

Adriaan Wiechers, Pretoria, South Africa, assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 17, 1977, Ser. No. 852,413

Claims priority, application South Africa, Nov. 26, 1976, 76/7089

Int. Cl.[2] B03D *1/02*

U.S. Cl. 209—166 **26 Claims**

1. In the method for the recovery of copper values by froth flotation from copper ores wherein an alkyl mercaptan having the formula C_nH_{2n+1}—SH wherein n is an integer of from 12 to 16 is used as a collector, the improvement which includes the step of, prior to addition of the mercaptan collector to the copper ore pulp, thoroughly mixing said mercaptan with a polyglycol selected from the following:

(a) a polyglycol having the general formula:

(I) R_1—$(OR_2)_m$—OH in which R_1 is selected from the group consisting of phenyl, alkyl substituted phenyl, alkyl, hydrogen and a saturated heterocyclic group, R_2 is an alkylidene group, m is an integer of at least 2 and said polyglycol has a molecular weight between 50 and 2000; and

(b) a polyglycol having the general formula:

(II) R_1—$(OR_3)_n$—$(OR_4)_p$—OH in which R_1 is as defined for formula I herein, R_3 is —CH_2CH_2—, R_4 is

$$-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-,$$

and n and p are integers ranging from 2 to 5, and the mixture containing greater than 50 percent by volume of said mercaptan.

4,211,645

FOAM FLOTATION ACTIVATED SLUDGE PROCESS

James E. Zajic; Martha A. Hill, both of London; Donald F. Manchester, Oakville, and Karel Muzika, Ottawa, all of Canada, assignors to Abitibi Paper Company Ltd., Toronto, Canada

Filed Apr. 25, 1977, Ser. No. 790,852

Claims priority, application Canada, Jul. 16, 1976, 257177

Int. Cl.[2] C02C *1/06, 5/10*

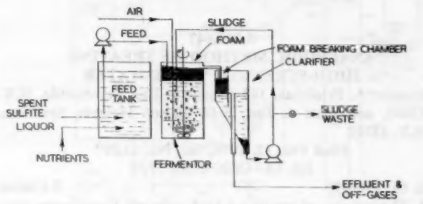
U.S. Cl. 210—7 **44 Claims**

1. A method of biodegrading a spent sulfite liquor having a dissolved solids content of 6 to 14% by an autolytic mixed fungal (yeast and yeast-like) system, consisting essentially of the steps of

(a) feeding said liquor to a mixed fungal (yeast and yeast-like) inoculated fermentor with agitation and with aeration, resulting in foaming of the mixture, said foam carrying with its fungus and sludge resulting from the fermentation, the suspended solids content of the foam when collapsed being lower than the suspended solids content of the fermentor broth,

(b) undertaking material transfer only by conducting said foam to a means for separation into a sludge and a clarified effluent,

(c) separating said foam into a sludge and a clarified effluent, and



(d) recycling at least a portion of the separated sludge to step (a).

44. A method for removing BOD and COD from a process waste liquor comprising

treating said process waste liquor with a microbial culture system, said microbial culture system being acclimatized to SSL and having at least one of the following fungal components, which have been identified through isolation and accepted taxonomical procedures:

1. *Phialophora jeanselmei* (Langeron) Emmons (ATCC 20,482)
2. *Phialophora richardsiae* (Nannfeldt apud Melin & Nannf.) Conant (ATCC 20,483)
3. *Hyalodendron lignicola* Diddens (ATCC 20,484)
4. *Trichosporon infestans* (Moses & Vianna) Ciferri & Radaelli (ATCC 20,485)
5. *Candida tropicalis* (Castellani) Berkout (ATCC 20,486).

4,211,646

WASTE WATER PROCESS

Clifton W. Westbrook, Groves; Lloyd J. Parcell, Beaumont, both of Tex.; Gary L. Claytor, Richmond, Va., and Byron V. Klock, Beaumont, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 31, 1977, Ser. No. 847,192

Int. Cl.[2] C02B *1/20;* **C02C** *5/02, 5/10*

U.S. Cl. 210—15 **33 Claims**

1. A method for treating a waste water stream characterized by having toxic and corrosive properties due to the presence of cyanides, formates, and a halide of a metal or ammonia which consists essentially of adding ferrous ions to said waste water, the amount of ferrous ions in moles being in excess of the total moles of cyanides present, while maintaining said waste water

at a pH in the range from about 7 to 9 and at a temperature from about 125° to 200° F. to effect the conversion of a substantial portion of said cyanides to iron cyanides and form a treated waste water, adding a base to said treated waste water until a pH of said waste water is in the range from about 9 to 11 to precipitate a sludge containing said iron cyanides, separating said waste water from said sludge, feeding said waste water to a biological reactor to effect the conversion of said formates to carbon dioxide and a biological residue, and recovering an environmentally upgraded waste water from said biological reactor.

4,211,647
ANAEROBIC METHOD OF TREATING HIGH-STRENGTH WASTE-WATER

Alexander A. Friedman, 163 Brookside La., Fayetteville, N.Y. 13066, and Scott J. Tait, B-14 Slocum Heights, Syracuse, N.Y. 13210

Filed Feb. 12, 1979, Ser. No. 11,097
Int. Cl.[2] C02C *1/04, 5/10*
U.S. Cl. 210—17 **5 Claims**

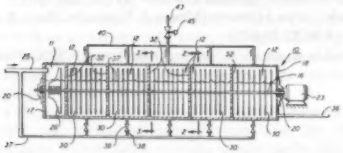
1. The process of treating a high strength wastewater containing anaerobic digestible nutrients and organic substrates including the steps of

rotatably supporting a plurality of contactors within an enclosed airtight housing upon a common shaft that passes horizontally through the housing,

partitioning the housing into separate horizontally aligned treatment stages, each of which contains a number of contactors therein,

passing a stream of high strength wastewater in series through each of the stages to partially wet each of said contactors,

mixing the influent prior to its entering the first stage in the series,



establising a colony of anaerobic organisms upon each of the contactors for feeding upon the nutrients and organic substrates contained in the wastewater to produce methane and carbon dioxide gases,

creating an anoxic atmosphere over the wastewater contained in the housing,

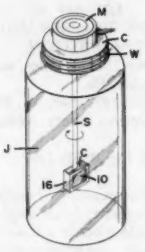
rotating said shaft at a predetermined rate to immerse the organisms into the wastewater for a first period of time wherein the organisms feed upon said nutrients and said organic substrates and to expose the organisms to the atmosphere over the fluid for a second period of time to permit the organisms to release the process gases into said atmosphere in response to the digestion of said nutrients and organic substrates.

4,211,648
Patent Not Issued For This Number

4,211,649
METHOD OF AND APPARATUS FOR TREATING WATER

Boris Sway, 7201 W. Aracoma Dr., Cincinnati, Ohio 45237

Filed Jun. 12, 1978, Ser. No. 914,569
Int. Cl.[2] C02B *1/16*
U.S. Cl. 210—37 R **13 Claims**



1. An apparatus for treating a given quantity of tap water for improving the taste thereof and removing undesirable ions therefrom which comprises:

(a) an open top vessel for receiving a quantity of water-to-be treated;

(b) at least one water-pervious housing which contains a quantity of granular material characterized by its ability to absorb those components of water which contribute to its off-taste or which remove the anions and cations from the water;

(c) a shaft extending axially into said vessel from the open top thereof;

(d) an open framework secured to and carried by said shaft for removably receiving the housing;

(e) means for producing relative rotary movement between water in the vessel contacting the housing and the water-pervious housing so as to provide a continuous recirculation of the water relative to the granular material;

(f) a lid for closing the open top of the vessel, said shaft rotatably secured to and depending from said lid;

(g) a motor secured to and carried by said lid in driving relationship with said shaft; and

(h) means securing said housing to said shaft wherein rotation of said housing causes the water within said vessel to be continuously recirculated through said framework, the housing, and its contents.

4,211,650
WATER RECLAMATION PROCESS

Robert C. Thomas, 3740 Campus Dr., Newport Beach, Calif. 92660

Continuation of Ser. No. 575,381, Jun. 9, 1975, abandoned. This application Aug. 21, 1978, Ser. No. 935,680
Int. Cl.[2] C02B *1/20;* **C02C** *5/02*
U.S. Cl. 210—44 **20 Claims**

1. A process for the purification of waste water by the re-

moval of suspended solid waste therefrom comprising the steps of:

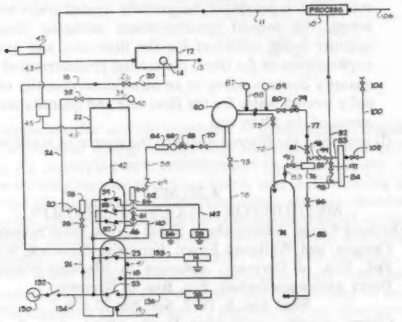
(a) accumulating the waste water in a waste water holding vessel to obtain a first predetermined initiating threshold quantity thereof;

(b) introducing waste water from the waste water holding vessel into a flotation cell at a continuous and predetermined rate after the first predetermined initiating threshold quantity is present in the waste water holding vessel, the continuous and predetermined rate corresponding to the rate and quantity requirements of the flotation cell, such waste water introduction into the flotation cell reducing the quantity of waste water in the waste water holding vessel to a first predetermined small quantity of waste water;

(c) agglomerating said suspended solid waste from the water in the flotation cell to produce partially treated water;

(d) removing the agglomerated suspended solid waste from the flotation cell;

(e) terminating waste water introduction into the flotation cell when the first predetermined small quantity of such water is present in the waste water holding vessel, the first predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the flotation cell, the first predetermined small quantity corresponding to an insufficient quantity of waste water for the flow rate and quantity requirements of the cell;



(f) accumulating partially treated water from the flotation cell in a partially treated water holding vessel to obtain a second predetermined initiating threshold quantity of partially treated water;

(g) introducing partially treated water from the partially treated water holding vessel into a filter at a second continuous and predetermined rate after the second predetermined initiating threshold quantity is present in the partially treated water holding vessel, such partially treated water introduction into the filter reducing the quantity of partially treated water in the partially treated water holding vessel to a predetermined second small quantity of partially treated water, the second continuous and predetermined rate corresponding to the rate and quantity requirements of the filter and being different from the first continuous and predetermined rate;

(h) filtering water treated in the flotation cell in the filter to remove additional suspended solid waste;

(i) terminating partially treated water introduction into the filter when the predetermined second small quantity of such water is present in the partially treated water holding vessel, the second predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the filter, the second predetermined small quantity corresponding to an insufficient quantity of partially treated water for the flow rate and quantity requirements of the filter; and

(j) recycling the filtered water to the source of the waste water.

4,211,651

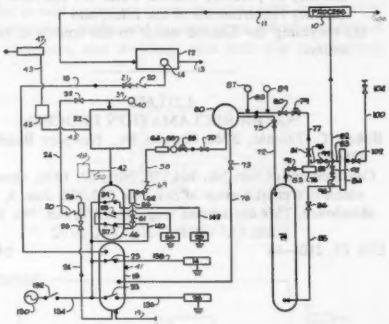
WATER RECLAMATION PROCESS

Robert C. Thomas, 3740 Campus Dr., Newport Beach, Calif. 92660

Continuation of Ser. No. 724,568, Sep. 20, 1976, abandoned, which is a continuation of Ser. No. 585,455, Jun. 9, 1975, abandoned. This application Aug. 23, 1978, Ser. No. 935,882

Int. Cl.[2] **C02B** *1/20;* **C02C** *5/02*

U.S. Cl. 210—44 **21 Claims**



1. A process for the purification of waste water by the removal of suspended solid waste therefrom comprising the steps of:

(a) accumulating said waste water in a waste water holding vessel to obtain a first predetermined initiating threshold quantity thereof;

(b) introducing waste water from the waste water holding vessel into a flotation cell at a first continuous and predetermined rate after the first predetermined initiating threshold quantity is present in the waste water holding vessel, the first continuous and predetermined rate corresponding to the rate and quantity requirements of the flotation cell, such waste water introduction into the flotation cell reducing the quantity of waste water in the waste water holding vessel to a first predetermined small quantity of waste water;

(c) agglomerating said suspended solid waste from the water in the flotation cell to produce partially treated water;

(d) removing the agglomerated suspended solid waste from the flotation cell;

(e) terminating waste water introduction into the flotation cell when the first predetermined small quantity of waste water is present in the waste water holding vessel, the first predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the flotation cell, the first predetermined small quantity corresponding to an insufficient quantity of waste water for the flow rate and quantity requirements of the cell;

(f) accumulating partially treated water from the flotation cell in a partially treated water holding vessel to obtain a second predetermined initiating threshold quantity of partially treated water;

(g) sterilizing the partially treated water;

(h) introducing partially treated water from the partially treated water holding vessel into a filter at a second continuous and predetermined rate after the second predetermined initiating threshold quantity is present in the partially treated water holding vessel, such partially treated water introduction into the filter reducing the quantity of partially treated water in the partially treated water holding vessel to a predetermined second small quantity of

partially treated water, the second continuous and predetermined rate corresponding to the rate and quantity requirements of the filter and being different from the first continuous and predetermined rate;

(i) filtering water treated in the flotation cell in the filter to remove additional suspended solid waste;

(j) terminating partially treated water introduction into the filter when the predetermined second small quantity of partially treated water is present in the partially treated water holding vessel, the second predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the filter, the second predetermined small quantity corresponding to an insufficient quantity of partially treated water for the flow rate and quantity requirements of the filter; and

(k) recycling the filtered water to the source of the waste water.

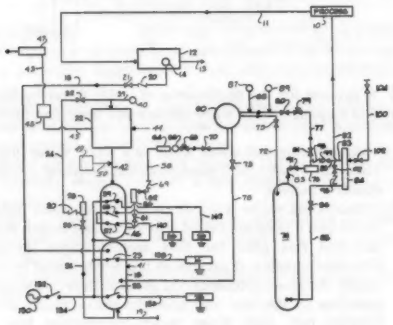
4,211,652
WATER RECLAMATION PROCESS

Robert C. Thomas, 3740 Campus Dr., Newport Beach, Calif. 92660

Continuation of Ser. No. 744,170, Nov. 22, 1976, abandoned, which is a continuation of Ser. No. 585,062, Jun. 9, 1975, abandoned. This application Aug. 23, 1978, Ser. No. 936,064

Int. Cl.[2] **C02B** *1/20*; **C02C** *5/02*

U.S. Cl. 210—44 **14 Claims**



1. A process for the purification of waste water by the removal of suspended solid waste therefrom comprising the steps of:

(a) accumulating the waste water in a waste water holding vessel to obtain a first predetermined initiation threshold quantity thereof;

(b) introducing waste water from the waste water holding vessel into a flotation cell at a first continuous and predetermined rate after the first predetermined initiating threshold quantity is present in the waste water holding vessel, the first continuous and predetermined rate corresponding to the rate and quantity requirements of the flotation cell;

(c) dissolving air in makeup water at a temperature below that of the waste water in the flotation cell;

(d) introducing the makeup water into the flotation cell and releasing air from solution in the makeup water by the warming of makeup water by the waste water, the released air being released as bubbles, such waste water introduction into the flotation cell reducing the quantity of waste water in the waste water holding vessel to a first predetermined small quantity of waste water;

(e) agglomerating said suspended solid waste from the water in the flotation cell to produce partially treated water by adherence of the suspended solid waste to the air bubbles;

(f) removing the agglomerated suspended solid waste from the flotation cell;

(g) terminating waste water introduction into the flotation cell and the first predetermined small quantity of such water is present in the waste water holding vessel, the first predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the flotation cell, the first predetermined small quantity corresponding to an insufficient quantity of waste water for the flow rate and quantity requirements of the cell;

(h) accumulating partially treated water from the flotation cell in a partially treated water holding vessel to obtain a second predetermined initiating threshold quantity of partially treated water;

(i) introducing partially treated water from the partially treated water holding vessel into a filter at a second continuous and predetermined rate after the second predetermined initiating threshold quantity is present in the partially treated water holding vessel, such partially treated water introduction into the filter reducing the quantity of partially treated water in the partially treated water holding vessel to a predetermined second small quantity of partially treated water, the second continuous and predetermined rate corresponding to the rate and quantity requirements of the filter and being different from the first continuous and predetermined rate;

(j) filtering water treated in the flotation cell in the filter to remove additional suspended solid waste;

(k) terminating partially treated water introduction into the filter when the predetermined second small quantity of such water is present in the partially treated water holding vessel, the second predetermined initiating threshold quantity being sufficient for the flow rate and quantity requirements of the filter, the second predetermined small quantity corresponding to an insufficient quantity of partially treated water for the flow rate and quantity requirements of the filter; and

(l) recycling the filtered water to the source of waste water.

4,211,653
METHOD FOR VACUUM FILTRATION

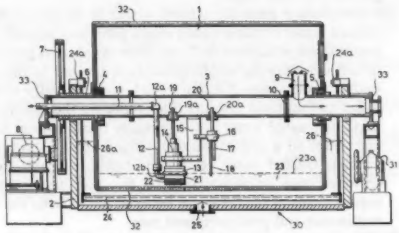
Eberhard Koppe, Johannesburg, South Africa; Peter Schonteich, Cologne, and Wolfgang Epper, Bergheim-Zieverich, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 5, 1979, Ser. No. 27,470

Claims priority, application South Africa, Apr. 7, 1978, 78/1999; Fed. Rep. of Germany, Aug. 17, 1978, 2835967

Int. Cl.[2] **B01D** *33/10*

U.S. Cl. 210—77 **4 Claims**



1. A method for the separation of solids-liquid mixtures which are subject to oxidation which mixed with air, comprising the steps of:

supporting a filter drum having a filter in a tank containing a mixture to be separated;

providing a fixed suction pump within said drum;

rotating said filter drum;

creating a vacuum inside said filter drum to draw said mixture through said filter means to and interior of said drum;

rotating said filter drum;

operating said suction pump having a suction head to suck filtrate from the interior of said drum;

maintaining a filtrate level inside said filter drum such that said suction head is constantly disposed beneath said filtrate level so as to prevent the mixing of said filtrate with air; and

discharing said filtrate from said interior of said filter drum.

4,211,654

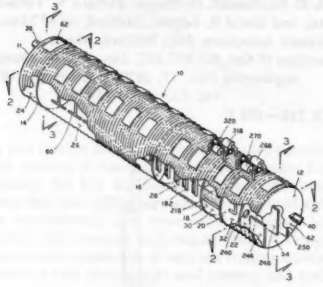
APPARATUS FOR AEROBIC TREATMENT OF CONTAMINATED LIQUID

Raymond C. Weber, Box 108, Ligonier, Ind. 46767, and Leslie A. Weber, R.R. #3, Albion, Ind. 46701

Filed Aug. 4, 1978, Ser. No. 930,899

Int. Cl.[2] C02C *1/02*

U.S. Cl. 210—104 **9 Claims**



1. Apparatus for aerobic treatment of contaminated liquids such as domestic sewage, comprising: an elongated fluid-tight means for conveying such contaminated liquid, a plurality of means forming interior chambers within said carrier means, at least one of said interior chambers including aerating chamber means for diffusing air through the contaminated liquid, means forming a clarifier chamber, means interconnecting said aerator chamber and said clarifier chamber to provide, in series, a flow of liquid therebetween for successive fluid treatment commencing in said aerator chamber and progressing to said clarifier chamber, means forming a plurality of filter chambers, each including a filtration medium, means for selectively transferring fluid in series from said clarifier chamber tosaid filter chambers as a successive flow for progressive treatment therein, sensor means for sensing both flow and time for the contamination treatment period, and including means for directing successive filtration and backwash modes for a respective one of said filter chambers in such manner that at least one of said filtration chambers is in filtration mode while at least one of the other filtration chambers is in a backwash mode, means for receiving a filtered flow of fluid and for shunting such flow as a counterflow to a selected one of said filter chambers to effect a backwash mode therein, and control means responsive to said sensor means to impart backwash flow to successive filter chambers in a backwash mode while the other filter chambers continue in primary filtering mode.

4,211,655

UPFLOW FILTER CONSTRUCTION

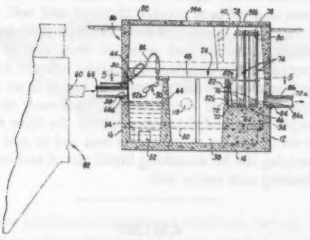
Edward J. Jordan, Willoughby, Ohio, assignor to Jet Aeration Company (Jet Inc.), Cleveland, Ohio

Filed Nov. 14, 1977, Ser. No. 851,044

Int. Cl.[2] B01D *23/16, 23/18*

U.S. Cl. 210—108 **19 Claims**

1. An upflow filter including in combination a generally rectangular-shaped, one piece, concrete container, having an open top, a bottom wall, and four side walls, said container comprising a concrete dividing wall extending between two opposed side walls of said container thereby forming first and second filtering chambers, said dividing wall having first and second end portions and an intermediate portion therebetween, said first end portion and said intermediate portion each having a top edge portion which is at a higher vertical level than a top edge portion of said second end portion, said dividing wall comprising a generally L-shape in side elevational view with said top edge portion of said first end portion and said intermediate portion being on the high part of the L-shape and the top edge portion of said second end portion being on the low part of the L-shape, said first end portion having a vertical opening extending therethrough from said top edge portion substantially to the bottom of said container and having first and second lateral exit portions communicating with said first and second filtering chambers adjacent the bottoms thereof, a liquid inlet in said container communicating with said vertical opening, a grating positioned in each of said first and second filtering chambers and dividing each into top and bottom



portions, filtering material on said grating for filtering liquid passing between said bottom and top portions of each chamber, a liquid outlet from said container, conduit means on the top edge portion of said second end portion of said dividing wall and defining a liquid flow passage, removable means in said conduit means to provide for the entrance of liquid from said first and second chambers into said passage, said intermediate portion having a vertical well therein extending from said top edge portion thereof to a level below said passage, other removable means coacting between said conduit means and said well, and between said conduit means and said outlet, to selectively connect said passage either directly to said well or directly to said outlet, removal of at least certain of said removable means permitting liquid from said first and second chambers to flow into said passage and then via said passage to either said well or said outlet.

4,211,656

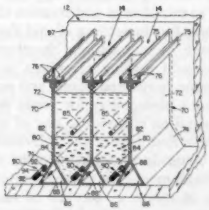
LIQUID TREATING SYSTEM

John J. Cochrane, 418 Lewis Wharf, Boston, Mass. 02110

Filed Jun. 26, 1978, Ser. No. 919,178

Int. Cl.[2] B01D *23/24*

U.S. Cl. 210—149 **32 Claims**



1. A liquid treating system comprising:

a tank,

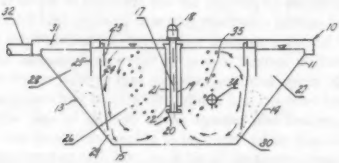
an influent conduit communicating with said tank adjacent the top thereof,
a reservoir downstream of said tank,
an effluent conduit disposed away from said influent conduit and communicating between said tank and said reservoir,
a backwash conduit communicating between said reservoir and said tank, and
means adjacent the top of said tank for carrying backwashing liquid therefrom,
said tank comprising a multiplicity of transversely extending contiguous cells, each having at least one centrally located drain above the bottom thereof communicating with said backwash and effluent conduits, the bottom of each said cell converging downwardly around said drain,
said drain being surrounded by filter media, and said drains having openings too small to pass any of the filter media, whereby when at least one of said cells operates in the normal mode, liquid to be treated flows downwardly from said influent conduit through said cell, converges toward said drain, and exits through said drain to said effluent conduit, and when at least one of said cells operates in the backwashing mode, influent is shut off to each said backwashing cell and liquid from said reservoir is pumped through said backwash conduit, diverges from said drain throughout the filter media, and flows upwardly to the top of said cell to said means for carrying the backwashing liquid out of said cell thereby cleaning said entire cell.

4,211,657

MEANS FOR BIOLOGICAL TREATMENT OF WATER

Vladimir N. Etlin, 7403 Lisle Ave., Falls Church, Va. 22043

Continuation of Ser. No. 768,993, Feb. 16, 1977, abandoned. This application Mar. 29, 1978, Ser. No. 891,261
Int. Cl.[2] C02F *3/20*
U.S. Cl. 210—195.4 **2 Claims**



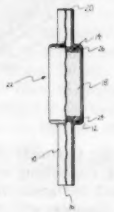
1. In a device for the biological treatment of waste water comprising a chamber for the aeration of said waste water and the exposure of said waste water to activated sludge, said aeration chamber having a horizontal sectional area which generally increases in size from a relatively smaller horizontal sectional area at the lower end thereof to a relatively larger horizontal sectional area at the upper end thereof, said aeration chamber having a waste water inlet in the lower area thereof so that the water moves generally from bottom to top of the aeration chamber, an aerator positioned in the lower part of said aeration chamber to aerate said waste water and cause said waste water to circulate in said aeration chamber, and a plurality of chambers for the settling of said sludge, at least one wall separating each of said settling chambers from said aeration chamber and said settling chambers positioned in approximately the same horizontal plane, and surrounding said aeration chamber, a passageway for waste water from the upper part of said aeration chamber to one of said settling chambers providing for a first step of the activated sludge settling and having the water level slightly lower than in the aeration chamber, trough means for conducting effluent from the first step settling chamber to another of said settling chambers providing a second step of sludge settling and having the water level slightly lower than in the first step sludge settling chamber, a conduit for sludge return from the second step sludge settling chamber to the aeration chamber, said conduit having a sludge inlet from the lower part of said second step settling chamber and a sludge outlet into said aeration chamber above said aerator in a zone of rising air bubbles emanating from said aerator, so that the pressure at said sludge outlet aspirates the sludge through the conduit without the use of pumps and is lower than at the port for sludge return from the first step sludge settling chamber, and a port in the lower part of the wall separating the first step settling chamber from the aeration chamber providing for the return of sludge from the said first step settling chamber to the aeration chamber, said port opening into said aeration chamber at a location which will be aspirated by said circulation of waste water, and the second step settling chamber having an outlet for removal of treated clarified waste water from the top thereof.

4,211,658

TRIAXIALLY COMPRESSED PACKED BEDS

Patrick D. McDonald, Holliston; Richard V. Vivilecchia, Hopkinton, and David R. Lorenz, Milford, all of Mass., assignors to Waters Associates, Inc., Milford, Mass.

Continuation of Ser. No. 867,442, Jan. 6, 1978, abandoned. This application Nov. 17, 1978, Ser. No. 961,747
Int. Cl.[2] B01D *15/08*
U.S. Cl. 210—198 C **12 Claims**



1. A chromatography cartridge comprising:
a volume of particulate chromatographic packing material, said volume having
a first surface through which fluid enters during use,
a second surface through which fluid exits during use, said first and second surfaces being substantially normal to an axial flow direction, and
a third surface with normals extending in generally radial directions perpendicular to the axial direction,
a first porous element contacting said first surface
a second porous element contacting said second surface,
a tube of solid heat-shrinkable plastic material shrunk
so as to fit tightly around said third surface of said volume and thereby radially compress said bed and
so as to fit tightly around portions of said first and second porous element to urge said porous elements toward each other to thereby axially compress said packing material,
said heat shrunk tube extending axially beyond said porous elements with a cross-sectional area less than that of said porous elements to form an inlet and outlet for said cartridge.

4,211,659

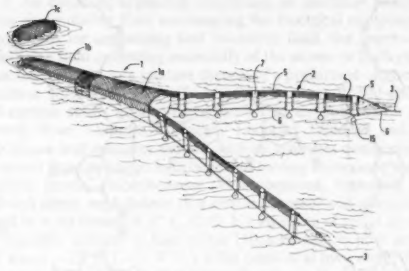
DEVICE FOR COLLECTING MATERIALS AS FOR EXAMPLE OIL FLOATING ON A WATER SURFACE

Knud H. Nyfeldt, Hus 235, Box 20, S-430 82 Donsö, Sweden, and Klas T. Y. Bernhardsson, Hus 81, S-430 92 Fotö, Sweden

Filed Jan. 24, 1979, Ser. No. 6,170
Claims priority, application Sweden, Feb. 2, 1978, 7801236
Int. Cl.[2] B01D *29/10, 33/00*
U.S. Cl. 210—242 S **3 Claims**

1. A device for collecting materials, including oil floating on water, said device having two upright floating walls converg-

ing on a collecting means to guide the materials into said collecting means during towing of the device, said collecting means comprising detachably interconnected hose-shaped sections capable of retaining collected material and including a forward section and a last trailing section constructed of a mesh dimensioned sufficiently small to retain said oil therewithin, the most forward section being connected to said floating walls and the last trailing section being pursed and sealed at



the trailing end thereof during towing, means for coupling said hose-shaped sections in succession, including means for pursing and sealing the last trailing section and its contiguous section when the last trailing section has collected sufficient material to be removed, and means for separating said last trailing section after pursing and sealing thereof, designed to enable complete disconnection of said last trailing section from the remainder of said device after said pursing and sealing.

4,211,660

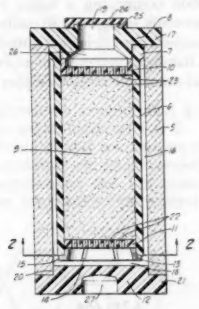
FILTER-PURIFIER CARTRIDGE

Isadore Turetsky, 23940 Welby Way, Canoga Park, Calif. 91307

Filed Mar. 26, 1979, Ser. No. 24,156

Int. Cl.[2] B01D *29/26*

U.S. Cl. 210—315 **7 Claims**



1. A filter-purifier cartridge for liquids having manually separable and assembled elements and adapted to be inserted in a filter apparatus, comprising: a self-contained purifier element having inlet and outlet means for flow of fluid therethrough, said purifier element being assembled and disassembled by manual means, and having an integral top wall, an integral collar and external flange at the upper end section of its hollow cylinder, inlet means at the lower end section of said hollow cylinder, a concentric discharge passage through said top wall, and purifying medium confined between two foraminous members within said hollow cylinder, the fluid stream within said purifier element communicating with the concentric discharge passage through said top wall; said hollow purifier cylinder and integral collar inserted into a tubular filter element having a manually separable cartridge end closure joined to its lower end section, the upper end section of said tubular filter joined to said integral collar, said collar maintaining the tubular filter in spaced relationship with said purifier cylinder to form an annular channel intermediate their sidewalls, said annular channel communicating with the inlet of said purifier element.

4,211,661

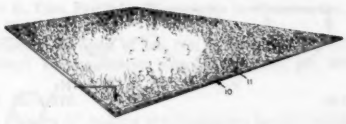
FILTER MEDIUM

Gerald N. Perry, Nashville, Tenn., assignor to Chave & Earley, Inc., New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,717

Int. Cl.[2] B01D *25/02, 29/04*

U.S. Cl. 210—491 **7 Claims**



1. A filter medium comprising a relatively strong substrate, said substrate being a laminate of a spun bonded material and a melt blown plastic material, a fibrous thermoplastic felt layer on the spun bonded surface of the substrate upstream to the flow of fluid to be filtered, means bonding the fibrous felt layer to the substrate by fibers needle punched through the fibrous felt layer and the substrate and fused on the downstream surface of the substrate, filtration perforations in the substrate formed by the needle punching and fibers protruding through the perforations on the melt down downstream surface of the substrate and fused on said downstream surface, the spun bonded material imparting the necessary strength, stability and integrity to the filter medium and having the ability to deform and retain discrete defined perforations formed therein for the free passage of fluids while preventing the flow therethrough of oversized particles, the fibrous felt layer collecting, trapping and retaining dirt and debris on the upstream surface of the substrate and the melt blown material and protruding fibers providing a downstream layer capable of retaining and filtering fine particles which pass through the perforations.

4,211,662

SYNERGISTIC LUBRICATING COMPOSITIONS

James P. King, Upper Gwyneed Township, Montgomery County, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

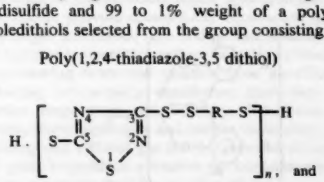
Filed Jun. 6, 1978, Ser. No. 912,915

Int. Cl.[2] C10M *3/18*

U.S. Cl. 252—21 **9 Claims**

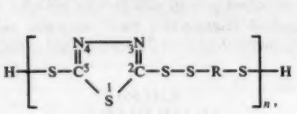
1. A synergistic lubricating composition comprising a lubricant selected from the group consisting of base lubricating oils and greases having admixed with the lubricant a friction reducing amount of a synergistic mixture of 1 to 99% weight molybdenum disulfide and 99 to 1% weight of a polymer of thiadiazoledithiols selected from the group consisting of;

Poly(1,2,4-thiadiazole-3,5 dithiol)



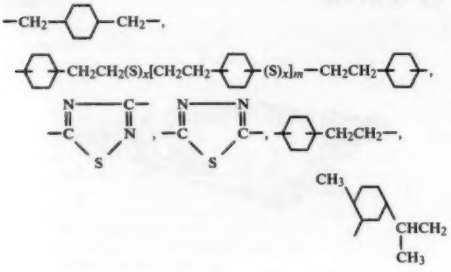
and

Poly(1,3,4-thiadiazole-2,5 dithiol)



wherein:

R is selected from the group consisting of



phenylene, biphenylene, and alkylene or substituted alkylene of 2–50 carbons, cyclic alkylene or substituted cyclic alkylene of 5–50 carbons, wherein the alkylene or cyclic alkylene can contain in the chain or ring sulfur atoms, or $(S)_x$-groups;

m is an integer of 0–10,

n is an integer of 5–100, and

x is an integer of 1–5.

7. The lubricating composition of claim **1** in which the lubricant is a base lubricating grease selected from the group consisting of lithium grease, clay grease, silicone grease and aluminum complex grease.

4,211,663

ALKALI METAL CONTAINING TRANSITION METAL COMPLEXES OF THIOBIS (ALKYLPHENOLS) AS STABILIZERS FOR VARIOUS ORGANIC MEDIA

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

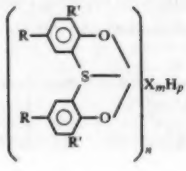
Filed May 1, 1978, Ser. No. 901,875

Int. Cl.[2] **C10M** *1/54, 3/48, 5/28, 7/52*

U.S. Cl. 252—42.7 **85 Claims**

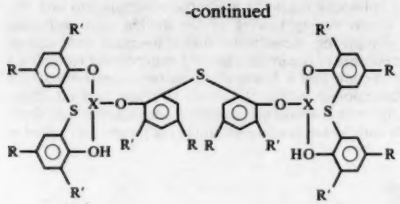
1. A mixed alkali metal-transition metal organosulfur-containing complex derived from transition metal complexes having the following general structures:

I

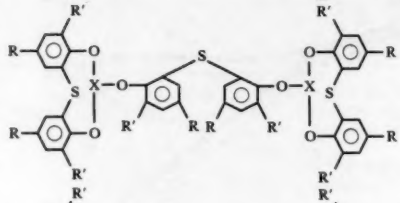


-continued

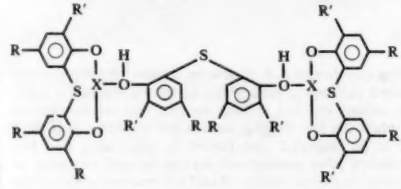
II



III or



IV



in which R is either hydrogen or an alkyl group having from 1 to about 30 carbon atoms in any isomeric arrangement and R′ may be the same as R except that isomers in which the carbon atom attached to the ring is connected to more than two carbon atoms are excluded, and wherein the alkali metal is selected from sodium, potassium and lithium, X is a transition metal selected from nickel, iron, copper and cobalt and n is 1 to 3, m is 1 to 2 and p is 0 to 2.

57. A composition comprising a major proportion of an organic medium normally susceptible to oxidative degradation and a minor amount sufficient to impart antioxidant properties and/or ultraviolet stabilization thereto of an organosulfur-containing alkali metal-transition metal complex as described in claim **1**.

4,211,664

PROCESS FOR MAKING COMPOSITE MAGNETIC MATERIAL

David R. Dixon, Keilor; Jack Lydiate, East Rosanna, and Frederick J. Lubbock, Beaumaris, all of Australia, assignors to ICI Australia Limited, Melbourne and Commonwealth Scientific and Industrial Research Organization, Campbell, both of, Australia

Filed Oct. 2, 1978, Ser. No. 947,401

Claims priority, application Australia, Oct. 7, 1977, 1980/77

Int. Cl.[2] **B01D** *39/00*

U.S. Cl. 252—62.54 **13 Claims**

13. A dimensionally-stable composite capable of selectively adsorbing dissolved materials according to the molecular size of said materials, said composite consisting essentially of adsorbent particles and magnetic particles in a porous, crosslinked polymeric matrix.

4,211,665

ELECTRICAL APPARATUS INSULATED WITH A HIGH FIRE POINT SYNTHETIC ALKYLAROMATIC FLUID

John P. Pellegrini, Jr., O'Hara Township, Allegheny County, Pa., assignor to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Oct. 26, 1978, Ser. No. 954,924
Int. Cl.[2] H01B 3/22
U.S. Cl. 252—63 8 Claims

1. An electrical apparatus comprising an electrical component, an insulating fluid surrounding the electrical component and means for containing said insulating fluid, the improved insulating fluid consisting essentially of the mono- or dialkylate reaction product or a mixture thereof of a preformed oligomer fraction consisting essentially of between about 30 and about 60 carbon atoms or a mixture thereof of an alpha-olefin selected from 1-butene, 1-hexene, 1-octene, 1-decene and 1-dodecene and mixtures thereof with an aromatic composition selected from aromatic hydrocarbons having from six to eight carbon atoms, chlorobenzene, bromobenzene, diphenyl, diphenyl ether, naphthalene or a mixture thereof and characterized by a maximum 98.9° C. (210° F.) viscosity of about 20 cs., a viscosity index of at least about 110, a maximum pour point of about −25° F. (−31.7° C.), a fire point of at least about 300° C. (572° F.) and a negative gassing tendency.

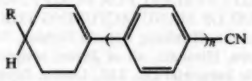
4,211,666

LIQUID CRYSTAL COMPOUNDS

Takashi Inukai; Hiromichi Inoue, and Hideo Sato, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

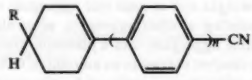
Filed Nov. 14, 1978, Ser. No. 960,710
Claims priority, application Japan, Nov. 21, 1977, 52-139610; Jun. 6, 1978, 53-67938
Int. Cl.[2] C09K 3/34; C07C 121/64; C02F 1/13
U.S. Cl. 252—299 6 Claims

1. 4-Alkylcyclohexenes having at the 1-position thereof p-cyanophenyl group or 4'-cyano-4-biphenylyl group, expressed by the general formula



wherein R represents a straight alkyl group having 1~9 carbon atoms and n represents 1 or 2.

6. A nematic liquid crystal composition containing at least one member selected from the group consisting of 1-(p-cyanophenyl)-4-alkylcyclohexenes and 1-(4'-cyano-4-biphenylyl)-4-alkylcyclohexenes, expressed by the general formula



wherein R represents a straight alkyl group having 1~9 carbon atoms and n represents 1 or 2.

4,211,667

PROCESS FOR PRODUCING ALUMINA SOLS

Koichi Yamada; Masao Yoshihara; Takahiro Ishida, all of Niihama, and Kazuo Sato, Nara, all of Japan, assignors to Sumitomo Aluminium Smelting Company, Limited, Osaka, Japan

Filed Mar. 1, 1978, Ser. No. 882,889
Claims priority, application Japan, Mar. 2, 1977, 52/23183
Int. Cl.[2] B01J 13/00
U.S. Cl. 252—313 R 7 Claims

1. A process for producing an alumina sol which comprises neutralizing a water-soluble basic aluminium salt of the formula,

$$Al_2(OH)_xX_yY_z$$

wherein X is Cl or NO_3, Y is SO_4, and x, y and z are numbers satisfying the equations $x+y+2z=6$, $0<x<6$, $0\leqq y<6$, $0\leqq 2z<6$, provided that y and z are not zero at the same time, with an alkali to produce an alumina gel and then subjecting said alumina gel to a hydrothermal treatment in the presence of a monovalent organic acid at a molar ratio of the organic acid to aluminum of from 0.001 to 0.15 to produce an alumina sol containing alumina particles of a plate-like or rod-like form.

4,211,668

PROCESS OF MICROENCAPSULATION AND PRODUCTS THEREOF

Clarence R. Tate, Fairfield, Ill., assignor to Thalatta, Inc., Fairfield, Ill.

Continuation-in-part of Ser. No. 775,203, Mar. 7, 1977, abandoned. This application Apr. 24, 1978, Ser. No. 899,580
Int. Cl.[2] B01J 13/02
U.S. Cl. 252—316 14 Claims

1. A process of making microcapsules having transparent capsule shells containing a hydrophobic liquid which is characterized by:

1. forming an emulsion comprising an outer hydrophilic phase and droplets of a hydrophobic liquid suspended therein as the inner hydrophobic phase, said outer hydrophilic phase comprising a hardenable wall forming polymeric material dissolved in an aqueous solvent;
2. contacting said emulsion with a break-up fluid which is not a solvent for said polymeric material, which is substantially immiscible with the polymeric material solvent, and which is capable of dividing said emulsion into separate capsules having an inner hydrophobic phase and an outer hydrophilic phase;
3. then hardening the hydrophilic phase of said capsules with a hardening liquid which is substantially miscible with the break-up bath, which is not a solvent for said polymeric material, and which is, of itself or in combination with another liquid, substantially immiscible with said polymeric material solvent.

4,211,669

PROCESS FOR THE PRODUCTION OF A CHEMICAL SYNTHESIS GAS FROM COAL

James M. Eakman, Houston, Tex.; Harry A. Marshall, Madison, and Theodore Kalina, Morris Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 9, 1978, Ser. No. 959,266
Int. Cl.[2] C01B 2/14, 2/16, 2/02
U.S. Cl. 252—373 11 Claims

1. A process for the production of a chemical synthesis product gas from a carbonaceous feed material and steam which comprises:

(a) reacting said steam with said carbonaceous feed material in a reaction zone at a reaction temperature between about 1000° F. and about 1500° F. and at a reaction pressure in excess of about 100 psia, in the presence of a carbon-alkali metal catalyst and sufficient added hydrogen and carbon monoxide to provide substantially equilibrium quantities of hydrogen and carbon monoxide in said reaction zone at said reaction temperature and said reaction pressure;

(b) withdrawing from said reaction zone an effluent gas containing substantially equilibrium quantities, at said reaction temperature and pressure, of methane, carbon dioxide, steam, hydrogen and carbon monoxide;

(c) treating said effluent gas for the removal of steam and acid gases to produce a treated gas containing primarily carbon monoxide, hydrogen and methane;

(d) recovering substantially all of the carbon monoxide and hydrogen from said treated gas as a chemical synthesis product gas, thereby producing a gas comprised substantially of methane;

(e) contacting the gas produced in step (d) comprised substantially of methane with steam in a steam reforming zone under conditions such that at least a portion of the methane present reacts with said steam to produce hydrogen and carbon monoxide; and

(f) passing the effluent from said steam reforming zone into said reaction zone without substantial cooling, thereby supplying said added hydrogen and carbon monoxide required in said reaction zone and wherein said reforming zone is operated at conditions such that the heat content of said effluent from said steam reforming zone is sufficient to supply substantially all of the heat needed to preheat said carbonaceous feed material to said reaction temperature.

4,211,670

TITANIUM TRICHLORIDE CATALYST COMPONENT FOR PROPYLENE POLYMERIZATION

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 25, 1979, Ser. No. 6,970
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—429 B **10 Claims**

1. A process for preparing a titanium trichloride composition of improved stereospecificity for use as a catalyst component in the polymerization of propylene, said process consisting essentially of the steps of 1) washing a crude titanium trichloride composition, prepared by reducing titanium tetrachloride with an organoaluminum compound, with an inert diluent, 2) suspending the washed titanium trichloride solids in an inert diluent containing a first electron donor compound, 3) maintaining said solids in suspension at a temperature of from about room temperature up to the boiling point of the diluent or the donor compound for a period of from about 15 minutes to about 100 hours, 4) separating the solids from the inert diluent containing the electron donor compound, 5) washing the separated solids with an inert diluent, and then 6) repeating steps 2, 3, 4 and 5 using a second electron donor compound in place of said first electron donor compound, said first electron donor compound being selected from the group consisting of dialkyl, diaryl and alkyl aryl ethers and thioethers wherein each alkyl group contains from one to ten carbon atoms and each aryl group contains from six to 12 carbon atoms, said second electron donor compound being selected from the group consisting of aromatic carboxylic acids containing seven to 12 carbon atoms; alkyl and aryl esters of aliphatic carboxylic acids, said esters containing four to 24 carbon atoms; alkyl and aryl esters of aromatic carboxylic acids, said esters containing eight to 24 carbon atoms; alkyl alkanesulfonates; alkyl arylsulfonates; ketoesters; chloroesters; ortho esters; N,N-dialkyl amides of aliphatic carboxylic acids, said amides containing four to 24 carbon atoms; N,N-dialkyl amides of aromatic carboxylic acids, said amides containing nine to 24 carbon atoms; N-alkyl lactams containing five to 15 carbon atoms; aliphatic ketones containing three to 15 carbon atoms; aromatic ketones containing eight to 15 carbon atoms; halogenated dialkyl ethers containing two to 20 carbon atoms; diethers containing three to 20 carbon atoms; dialkyl thioethers, sulfoxides, sulfones and disulfides containing two to 20 carbon atoms; aromatic sulfides or diaryl thioethers containing 12 to 20 carbon atoms; sulfoxides, sulfones and disulfides corresponding to said diaryl thioethers; phosphines and phosphite and phosphate esters containing three to 21 carbon atoms; metal coordinating hydrocarbons having multiple double bonds and containing seven to 28 carbon atoms; aliphatic nitriles containing two to 12 carbon atoms; aromatic nitriles containing seven to 12 carbon atoms; aliphatic amines containing one to 20 carbon atoms; and heterocyclic amines possessing aromatic characteristics and containing three to 15 carbon atoms, said inert diluent being selected from the group consisting of a) saturated aliphatic hydrocarbons having from three to 20 carbon atoms, b) aromatic hydrocarbons having from six to 20 carbon atoms, said aromatic hydrocarbons being either unsubstituted or substituted by alkyl radicals having from one to 20 carbon atoms, aralkyl radicals having from seven to 15 carbon atoms or aryl radicals having from six to eight carbon atoms, c) halogenated aromatic hydrocarbons having from six to 16 carbon atoms, and d) mixtures thereof, with the proviso that, when a thioether is used as either the first or the second electron donor compound in said process, a thioether is not also used as the other electron donor compound in the process.

4,211,671

OLEFIN POLYMERIZATION CATALYST

Glen R. Hoff, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 27, 1978, Ser. No. 964,034
Int. Cl.[2] C08F *4/64, 4/68*
U.S. Cl. 252—431 N **18 Claims**

1. An alpha-olefin polymerization catalyst comprising (A) a solid component which is the reaction product of components comprising (1) an alkyaluminum halide and (2) a reaction product prepared by reacting components comprising a magnesium (II) compound and Group IVB or VB amide compound of the general formula $M(NR_2)_nL_{4-n}$ wherein M is the Group IVB or VB metal, R is an alkyl or aryl group, L is a non-amine ligand and is halogen and n is a number from 1 to 4; and (B) an organometallic promotor selected from the group consisting of Group IA, IIA, IIB, IIIA and IVA metal alkyls, hydrides, alkylhydrides and alkyl halides in an amount which is effective to promote the polymerization activity of said solid component, wherein said solid component is prepared at a temperature within the range of from about 0° to about 250° C. and in relative proportions such that the molar ratio of elemental IVB or VB metal to elemental magnesium ranges from about 0.1:1 to about 10:1.

4,211,672

SUPPORTED CATALYST FOR PURIFYING GAS AND METHOD OF MANUFACTURING THE SAME

Kazunori Sonetaka, Hirakata; Atsushi Nishino, Neyagawa, and Kunio Kimura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 24, 1978, Ser. No. 936,507
Claims priority, application Japan, Aug. 26, 1977, 52-102971
Int. Cl.[2] B01J *21/12, 21/58, 23/78*
U.S. Cl. 252—455 R **5 Claims**

1. A catalyst for use in purification of a gas which comprises a catalyst carrier composed of alumina cement having a CaO component of less than 40% by weight, an Al_2O_3 component of more than 35% by weight and a Fe_2O_3 component of less than 20% by weight and at least one aggregate selected from the group consisting of silica aggregate, silica-alumina aggregate, and alumina aggregate, and a platinum group metal supported on said catalyst carrier in an amount of 0.001 to 0.1% by weight, said catalyst being produced by the steps comprising:

a. molding a molded body from a mixture comprising alumina cement and said aggregate;

b. curing said molded body for the hardening thereof,

c. subsequently heat treating said hardened molded body at a temperature range from 250° to 700° C. to obtain a catalyst carrier; and

d. causing a platinum group metal to be supported on said catalyst carrier by steps comprising:

1. contacting said carrier with a solution of a salt of said platinum group metal to impregnate said solution on the surface of said carrier; and

2. subsequently heat treating said catalyst impregnated carrier at a temperature below 700° C. to convert said platinum group metallic salt into a platinum group metal.

4,211,673

CATALYTIC METAL-RARE EARTH METAL HYDRIDE FOR REDUCTION OF CARBON MONOXIDE IN HYDROGEN

Philip C. Lewellen, Albuquerque, N. Mex.; Walter C. Gates, Jr., Newburgh, N.Y., and Roger G. Duranleau, Georgetown, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,260

Int. Cl.[2] B01J *23/10, 23/74*

U.S. Cl. 252—462 2 Claims

1. A catalyst of the formula:

$$RT_5(H)_x$$

wherein R is a rare earth metal, T is a Group VIII transition metal, x is a number ranging from 0.1 t 6, determined by the pseudo-saturation pressure of RT_5 at the temperature at which a given catalytic reaction is to take place wherein small changes in applied H_2 partial pressure below the pseudo-saturation pressure cause x to decline rapidly and large changes in applied H_2 partial pressure above the pseudo-saturation pressure cause x to increase only slightly.

4,211,674

CYCLIC ACETALS AND KETALS AND THEIR USE IN PERFUME COMPOSITIONS

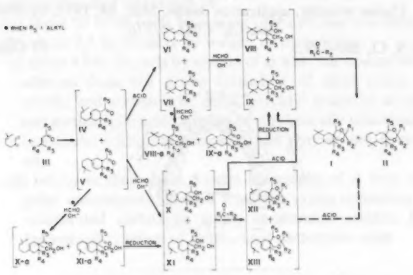
Willem Lenselink, Voorthuizen, Netherlands, assignor to Polak's Frutal Works B.V., Amersfoort, Netherlands

Filed Mar. 23, 1979, Ser. No. 23,481

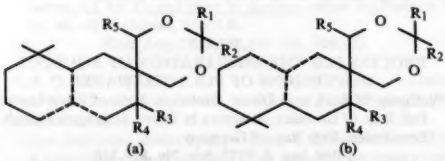
Claims priority, application United Kingdom, Apr. 10, 1978, 13958/78

Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 R 36 Claims



1. A compound selected from the class of compounds having the structural formulae



wherein R_1 is hydrogen or an alkyl, alkenyl or alkoxy group and wherein R_2, R_3, R_4 and R_5 are hydrogen or alkyl groups and the total number of carbon atoms of R_1, R_2, R_3, R_4 and R_5 combined is 6 or less and the dotted lines indicate carbon-to-carbon double or single bonds with the limitation that only one of the dotted lines can be a double bond.

4,211,675

DETERGENT BARS WITH IMPROVED SLIP PROPERTIES

David Machin, South Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,011

Claims priority, application United Kingdom, Jan. 19, 1978, 2218/78

Int. Cl.[2] C11D *1/12, 3/22, 17/00*

U.S. Cl. 252—557 8 Claims

1. A detergent bar containing from about 20% to about 70% by weight of water soluble salts of acyl (C_8 to C_{22}) isethionates and an amount of sucrose ester (C_6 to C_{22}) effective to increase the slip properties of the bar.

4,211,676

PROCESS FOR RECLAIMING SCRAP VULCANIZED RUBBER

Yoji Watabe, Akikawa; Yoshihiko Fujii; Shiro Anzai, both of Higashi Murayama, and Junji Furukawa, Kyoto, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed May 31, 1978, Ser. No. 911,197

Claims priority, application Japan, Jun. 7, 1977, 52-66277; Jun. 10, 1977, 52-67824; Jun. 17, 1977, 52-70971; Jul. 12, 1977, 52-82567

Int. Cl.[2] C08L *17/00;* C08J *11/04*

U.S. Cl. 260—2.3 14 Claims

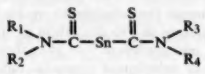
1. A process for reclaiming scrap vulcanized diene rubber which comprises mixing 100 parts by weight of scrap vulcanized diene rubber with 0.05 - 10 parts by weight of at least one reclaiming agent selected from the group consisting of:

(a) 1,8-diazabicyclo-[5, 4, 0] undecene-7,

(b) unsubstituted or substituted phenol salts of 1,8-diazabicyclo-[5, 4, 0] undecene-7,

(c) carboxylic acid salts of 1,8-diazabicyclo-[5, 4, 0] undecene-7,

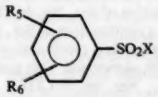
(d) thiuramsulfide compounds of the formula



where R_1, R_2, R_3 and R_4 are, similar or dissimilar, hydrocarbon group having 1–6 carbon atoms, and R_1 and R_2, taken together, may form a ring including the nitrogen atom to which R_1 and R_2 are bonded, and R_3 and R_4, taken together, may form a ring including the nitrogen atom to which R_3 and R_4 are bonded, and n is 1 or 2,

(e) aromatic disulfides, and

(f) benzene sulfinic acid compounds or benzene sulfonyl hydrazides of the formula



where X is selected from the group consisting of H, Li, Na, K, and —$NHNH_2$, and R_5 and R_6 are, similar or dissimilar, selected from the group consisting of H and alkyl of C_{1-4}, provided that the compound (e) is not used alone.

4,211,677

POLYPHOSPHAZENE COPOLYMERS WITH PHENOXY AND WITH PHENYLPHENOXY AND/OR NAPHTHOXY GROUPS, AND AQUEOUS DISPERSIONS

Selwyn H. Rose, Highland Park, and Ashok Chattopadhyay, Mt. Prospect, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 12, 1977, Ser. No. 859,748
Int. Cl.[2] C08G 73/00; C08K 5/09, 5/36
U.S. Cl. 260—13 15 Claims

1. A hologen-free polyphosphazene copolymer having at least one phenoxy substituent and a second substituent selected from phenyl phenoxy, naphthoxy and mixtures thereof in a ratio of 30:70 to 95:5.

4,211,678

COPOLYESTER YARNS AND FIBERS DYEABLE WITHOUT CARRIER AT ATMOSPHERIC PRESSURE

Charles L. Henry, Asheville, and James E. White, Candler, both of N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed Sep. 12, 1978, Ser. No. 941,621
Int. Cl.[2] C08G 63/18; D01F 6/62, 9/08
U.S. Cl. 260—22 D 15 Claims

1. A copolyester of terephthalic acid, ethylene glycol, dimer acid and polyoxyethylene glycol containing from about 2 to about 4% by weight of dimerate units based on the weight of the polymer and from about 1 to about 3% by weight of polyoxyethylene units based on said polymer weight.

4,211,679

ORGANOBORON PLASTICIZED POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind., and Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 28, 1978, Ser. No. 946,539
Int. Cl.[2] C08K 3/38, 5/55
U.S. Cl. 260—29.1 R 7 Claims

1. A plasticized polycarbonate composition comprising an admixture of a high molecular weight aromatic polycarbonate and a plasticizing amount of an organoboron plasticizer selected from one of the following general formulae:

I. $B(OR)_3$

II. $ArB(OR)_2$

III. $(ROBO)_3$

wherein R is a member selected from the group consisting of C_1 to C_{20} alkyl, cycloalkyl of 4 to 14 carbon atoms, alkenyl of 2 to 20 carbon atoms, aryl, and substituted aryl of 6 to 14 carbon atoms wherein the substituents on said substituted aryl can be halogen, alkoxy of 1 to 20 carbon atoms, alkaryl of 7 to 36 carbon atoms, and aralkyl of 7 to 36 carbon atoms; Ar is an aromatic radical or substituted aromatic radical wherein the substituents on said substituted aromatic radical can be halogen, alkyl of 1 to 20 carbon atoms, and alkoxy of 1 to 20 carbon atoms.

4,211,680

QUICK-SET COMPOSITIONS OF HYDRAULIC CEMENT, SILICA, WATER, POLYISOCYANATE AND POLYOL

Herbert J. Shearing, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 649,483, Jan. 15, 1976, abandoned, which is a continuation of Ser. No. 463,137, Apr. 22, 1974, abandoned, which is a continuation of Ser. No. 226,301, Feb. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 818,083, Apr. 21, 1969, abandoned. This application Jun. 1, 1978, Ser. No. 911,518
Claims priority, application United Kingdom, May 13, 1968, 22624/68
Int. Cl.[2] C08L 75/06, 75/08
U.S. Cl. 260—29.2 TN 8 Claims

5. An unfoamed cement product suitable for use as a flooring composition obtained by mixing together and allowing to cure components consisting essentially of a portland cement, a silica filler, water, an organic polyisocyanate and a polyol, the organic polyisocyanate being employed in an amount sufficient to provide an excess of isocyanate groups over the hydroxyl groups of the polyol wherein the ratio of organic polyisocyanate and polyol taken together to water ranges from 0.98:1 to 8.4:1, the amount of water ranging from about 15 to 25% by weight to that of said portland cement.

4,211,681

POLY(ETHYLENE OXIDE) COMPOSITIONS

David B. Braun, Ridgefield, Conn., and Stephen Drap, Pawling, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 16, 1978, Ser. No. 934,265
Int. Cl.[2] C08L 71/02
U.S. Cl. 260—29.2 R 8 Claims

1. A composition comprising:

(a) from 25 to 98 weight percent, of a poly(ethylene oxide) having an average molecular weight of from 600,000 to 10,000,000;

(b) from 1 to 50 weight percent of water;

(c) from 1 to 50 weight percent of propylene glycol; and

(d) from 0.01 to 1 weight percent of a stabilizer from the group consisting of ascorbic acid, monobutylated hydroxyanisole, and tertiary butyl hydroquinone;

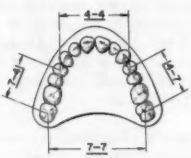
wherein the concentrations of (a), (b), (c) and (d) are based on the total weight of the composition.

4,211,682

DENTAL HYDRAULIC INVESTMENT

Taro Suminoe, Tokyo; Tetsuo Ito, Machida, and Eiichi Masuhara, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1978, Ser. No. 885,129
Claims priority, application Japan, Mar. 18, 1977, 52-29994
Int. Cl.[2] C08L 61/10
U.S. Cl. 260—29.3 31 Claims



1. A dental hydraulic investing material comprising (A) an aqueous polyvinyl alcohol solution, (B) a water-soluble metallic compound, (C) a water-soluble thermosetting resin precondensate and (D) a powdery filler-containing filler, wherein said investing material contains essentially no gypsum.

4,211,683

PROCESS FOR THE PREPARATION OF AQUEOUS DISPERSIONS OF POLYURETHANES

Wolfgang Wenzel, and Dieter Dieterich, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1977, Ser. No. 821,268
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637690
Int. Cl.[2] C08L 61/28, 75/12
U.S. Cl. 260—29.4 R 9 Claims

1. A process for the preparation of aqueous dispersions of polyurethanes which have urea end groups and which contain non-ionic hydrophilic segments and which may be cross-linked

by means of cross-linking agents which are reactive with urea groups comprising reacting in a reaction vessel a prepolymer which has isocyanate end groups and which

(i) has a stoichiometrically calculated average molecular weight of less than about 10,000; and

(ii) contains from about 2 to 30%, by weight, of ethylene oxide units corresponding to the following formula;

$$-CH_2-CH_2-O-$$

arranged within a polyether chain containing ethylene oxide units, at from about 10° to 70° C. with an aqueous solution of ammonia or with a monoprimary amine, optionally dissolved in water, the aqueous solution of ammonia or the monoprimary amine, optionally dissolved in water, being added to the prepolymer previously introduced into the reaction vessel, the quantity of water used for dissolving the ammonia or primary amine being at the most about 10%, by weight, based on the total quantity of the reaction mixture, and finally, after completion of the addition reaction between the free isocyanate groups of the prepolymer and the added ammonia or monoprimary amine, the desired reaction product is stirred with water at from about 10° to 70° C. to form a from about 5 to 65%, by weight, aqueous dispersion.

4,211,684

VINYLIDENE CHLORIDE POLYMER LATEX

Masaoki Koyama, Yokohama, and Hiroyuki Kigo, Nobeoka, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Aug. 18, 1978, Ser. No. 934,919
Claims priority, application Japan, 1977, 52-102623
Int. Cl.[2] C08L *23/14*
U.S. Cl. 260—29.6 TA **3 Claims**

1. An aqueous polymer latex coating composition comprising the product obtained by emulsion polymerizing a monomer mixture consisting essentially of

(a) about 50 to 95 parts by weight of vinylidene chloride;

(b) about 0.5 to 30 parts by weight of propylene;

(c) about 4.5 to 20 parts by weight of at least one comonomer selected from the group consisting of alkyl esters of acrylic and methacrylic acids, glycidyl esters of acrylic and methacrylic acids, nitriles of ethylenically unsaturated carboxylic acids, vinyl chloride, and styrene; and, optionally,

(d) not more than about 5 parts by weight of at least one polar comonomer selected from the group consisting of unsaturated carboxylic acids, unsaturated amides, and hydroxyalkyl esters of unsaturated carboxylic acids.

4,211,685

ADHESIVE COMPOSITION

Grigory M. Konovenko, ulitsa Posmitnogo, 25, kv. 15; Svetlana L. Slipchenko; Vladimir M. Markus, both of Proletarsky bulvar, 12, kv. 13, and Nina N. Kasjura, ulitsa Segedskaya, 3, kv. 44, all of Odessa, U.S.S.R.

Filed Aug. 16, 1978, Ser. No. 934,072
Int. Cl.[2] C08K *5/15*
U.S. Cl. 260—30.4 EP **4 Claims**

1. An adhesive composition, comprising the following ingredients (wt.%):

low molecular dianic epoxy resin as a binder: 20.0 to 50.0

a mixture of phenyl-glycidyl ether and aliphatic epoxy resin taken in the weight ratio of (0.5 to 1.5):1.0 used as a plasticizer: 2.0 to 15.0

polyethylene polyamine as a hardener: 2.0 to 8.0

finely divided aliminium oxide modified with chromium oxide in single crystal form: 25.0 to 60.0.

4,211,686

UNSATURATED POLYESTER RESIN COMPOSITION FOR USE IN PRESSURE MOLDING

Akio Nishikawa; Junichi Katagiri; Noriyuki Kinjo, all of Hitachi; Hitoshi Yokono, Katsuta; Tamotsu Ikeda, Hitachi, and Tsuguo Kobayashi, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 10, 1977, Ser. No. 767,322
Claims priority, application Japan, Feb. 12, 1976, 51-13200
Int. Cl.[2] C08K *7/14*
U.S. Cl. 260—40 R **19 Claims**

1. An unsaturated polyester resin composition for use in pressure molding, which comprises:

(I) a liquid mixture comprising an unsaturated polyester resin of a polycondensate or condensate synthesized from an unsaturated or saturated polybasic acid or anhydrides thereof, and hydroxyl compounds, or precursors thereof, an ethylenically unsaturated compound monomer in an amount of 20 to 50% by weight, based on the mixture, and a curing catalyst in an amount effective for the polymerization reaction between the polyester resin and the compound monomer, said mixture having a viscosity of 50 to 50,000 centipoises at 25° C., and

(II) a filler consisting essentially of,

(a) a calcium carbonate powder,

(b) a silica sand having a particle size larger than said powder and smaller than 1500 μm and

(c) a chopped glass fiber wherein the ratio by weight of (a) to (b) is within a range of from 0.3 to 10, the ratio of (a) and (b) to (I) is within a range of from 2.5 to 6, and the ratio of (c) to the total weight of (I) and (II) is within a range of from 0.01 to 0.25.

4,211,687

POLYMER BLENDS WITH IMPROVED FLAME RETARDANCE

Gideon Salee, Williamsville, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 819,539, Jul. 27, 1977. This application Dec. 22, 1977, Ser. No. 863,556
Int. Cl.[2] C08K *7/14*; C08L *67/02*
U.S. Cl. 260—40 R **15 Claims**

1. In a thermoplastic polymeric composition comprising a mixture of (a) a linear aromatic polyester of components consisting essentially of a bisphenol and a dicarboxylic acid, and (b) polyphenylene sulfide, the improvement wherein the composition contains an effective flame retardant proportion of a halogen-containing Diels Alder adduct of

(A) a cyclopentadiene wherein all of the hydrogen atoms of the carbon atoms joined by carbon-to-carbon double bonds have been replaced by halogen, selected from the group consisting of fluorine, chlorine, and bromine, and

(B) an ethylenically unsaturated organic compound containing one or two carbon-to-carbon double bonds;

the molar proportion of the cyclopentadienyl residue to unsaturated compound residue in said adduct being 1:1 when the unsaturated compound contains one carbon-to-carbon double bond, and 2:1 when the unsaturated compound contains two carbon-to-carbon double bonds, said composition being substantially free of an antimony constituent.

4,211,688
PROCESS FOR DYEING HIGH-MOLECULAR ORGANIC MATERIAL IN THE MELT

Hans Altermatt, Reinach, and Arnold Wick, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

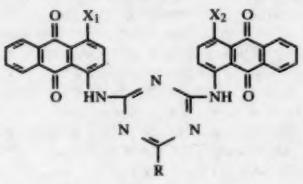
Filed Jun. 6, 1978, Ser. No. 913,159

Claims priority, application Switzerland, Jun. 14, 1977, 7297/77

Int. Cl.[2] C08K *5/08, 5/34*

U.S. Cl. 260—40 P **10 Claims**

1. A process for the dyeing of high molecular organic material in the melt which comprises incorporating, as a colouring substance, an anthraquinone compound of the formula



(I)

wherein R represents straight-chain or branched-chain alkyl having 1 to 17 C atoms, X_1 and X_2 represent hydrogen or benzoylamino, X_1 represents hydrogen and X_2 represents benzoylamino or mixtures thereof into said high molecular organic material.

4,211,689
COPOLYESTERS OF POLYBUTYLENE TEREPHTHALATE

Willem F. H. Borman, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 6, 1978, Ser. No. 966,880

Int. Cl.[2] C08K *7/14;* **C08L** *67/02*

U.S. Cl. 260—40 R **13 Claims**

1. A thermoplastic copolyester which is linear or branched and which consists essentially of units derived from:

(a) a terminally-reactive poly(1,4-butylene terephthalate); and

(b) a terminally-reactive polymeter of (i) a cycloaliphatic 1,2-dicarboxylic acid or a derivative thereof, and mixtures thereof and (ii) 1,4-butanediol.

9. A thermoplastic composition as defined in claim 1 which also includes (c) an effective amount of a reinforcing agent and/or a filler.

4,211,690
POLYPROPYLENE RESIN COMPOSITIONS AND MOLDINGS THEREOF

Hideki Asano; Hiroyoshi Kokaku, both of Hitachi; Katsuhito Suzuki, Mito, and Kenichi Saida, Shiranuka, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 30, 1978, Ser. No. 937,980

Claims priority, application Japan, Sep. 5, 1977, 52-105871

Int. Cl.[2] C08L *53/00, 23/12, 23/08, 23/14*

U.S. Cl. 260—42.46 **15 Claims**

1. A polypropylene resin composition comprising (A) 100 parts by weight of propylene homopolymer having an intrinsic viscosity in tetralin at 135° C. of no less than 1.9; and (B) 40–150 parts by weight of ethylene/propylene copolymer having an intrinsic viscosity in tetralin at 135° C. of 1.4–1.7 and an ethylene content of 2–15 molar % and (C) 40–150 parts by weight of a block ethylene/propylene copolymer having an intrinsic viscosity in tetralin at 135° C. of no less than 1.9 and an ethylene content of 2–20 molar %.

4,211,691
THERMOPLASTIC POWDER COATING SYSTEMS

Emerson B. FitzGerald, Wilmington, Del., and Walter C. Meyer, Lake Orion, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 771,066, Feb. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 576,633, May 12, 1975, abandoned, which is a continuation-in-part of Ser. No. 405,627, Oct. 11, 1973, abandoned. This application Nov. 6, 1978, Ser. No. 957,915

Int. Cl.[2] C08L *63/10*

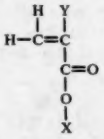
U.S. Cl. 260—42.21 **3 Claims**

1. A thermoplastic powder coating composition for coating substrates comprising particles of polymeric material consisting essentially of a mixture of polymer (A) and polymer (B), polymer (A) and polymer (B) being a polymer of ethylenically unsaturated monomers and having reactive groups, the reactive groups on polymer (A) being coreactive in a condensation reaction with the reactive groups on polymer (B) and said reaction taking place on the substrate to which the powder coating composition is applied to form a thermoplastic coating on the substrate of a condensation polymer having a weight average molecular weight of 40,000–200,000;

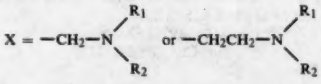
wherein said particles have an average diameter of about 5–300 microns; wherein said polymer (A) and polymer (B) have a glass transition temperature of about 45°–115° C., a weight average molecular weight of about 5,000–180,000; wherein said polymer (A) and polymer (B) are compatible as indicated by the miscibility of their solutions; wherein said reactive groups are selected from the class consisting essentially of carboxyl, acid chloride, isocyanato, amino, hydroxyl, epoxy, and aziridinyl groups, and wherein the product of said condensation reaction has a weight average molecular weight of about 40,000–200,000;

wherein there is presennt a sufficient number of equivalents of either of polymer (A) or polymer (B) that contains an average of about 0.9–1.1 reactive groups per molecule to react with at least about 50% of the reactive groups on the other of polymer (A) or polymer (B) that contains an average of at least one reactive group per molecule, and

wherein polymer (A) and polymer (B) are formed from unsaturated monomers selected from at least one of esters of acrylic acid or methacrylic acid with alkanols of C_1–C_{18}, amides of acrylic or methacrylic acid, nitriles of acrylic acid or methacrylic acid, styrene, C_1–C_6 alkyl styrenes, vinyl esters of fatty acids having 2–20 arbon atoms, vinyl chloride,



wherein Y=—H, —CH_3 or —CH_2CH_3 and



wherein R_1 and R_2 are H or C_1–C_4 alkyl and one of acrylic acid, methacrylic acid, itaconic acid, maleic anhydride, crotonic acid, allyl alcohol, hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate, hydroxypropyl methacrylate vinyl alcohol, 2-isocyanato ethyl methacrylate, glycidyl methacrylate aziridinyl methacrylate, methacryl chloride, and ethacryl chloride in each of polymer (A) and polymer (B), such that the

reactive groups on polymer (A) are coreactive in a condensation reaction with the reactive groups on polymer (B).

2. The composition of claim 1 wherein the particles contain pigment in an amount of about 0.5–60% by volume based on the combined volume of the pigment and polymer (A) and polymer (B).

4,211,692

EXTRUSION COATING COMPOSITIONS FOR WOVEN AND NON-WOVEN POLYOLEFIN SUBSTRATES AND ARTICLES THEREOF

Edward Barkis; Robert R. Crummer, both of Marietta, and James M. Joyner, East Point, all of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 29, 1976, Ser. No. 671,068

Int. Cl.[2] C08K *3/32;* **C08L** *23/04, 23/16*

U.S. Cl. 260—45.7 P **8 Claims**

1. An extrusion coating composition for woven and nonwoven polyolefin substrates comprising:

(a) about 50–90% by weight of a terpolymer containing reacted ethylene, propylene, and a diene, said terpolymer having a flow rate in the range of about 0.5 to 1.0 g/10 min., wherein the diene is in a low concentration up to a maximum concentration in percent by weight of about 3% and is a monomer selected from the group consisting of 1,3-butadiene, isoprene, chloroprene, cyclooctadiene-1,5, dicyclopentadiene, cyclododecatriene-1,5,9, cyclododecadiene-1,7, cycloheptadiene-1,4, cyclohexadiene-1,4, norbornadiene, methylene-norbornene, methyl-tetrahydroindene, dimethyl-tetrahydroindene, 6-methyl-heptadiene-1,5, hexadiene-1,4, 6-methyl-4,7,8,9-tetrahydroindene, and ethylidene-norbornene, and wherein the reacted ethylene and propylene are in a ratio by weight of about 3:1;

(b) about 50–10% by weight of a high density polyethylene having a flow rate of about 0.2–30 g/10 min., an unannealed density in the range of about 0.956–0.965, and a weight average molecular weight in the range of about 50,000–200,000;

(c) about 0.5–5% by weight of an opacifier;

(d) about 0.5–15% by weight of a fire retardant composition comprising at least one polyhalogenated organic compound and antimony trioxide;

(e) about 0.5–3% by weight of an ultraviolet light stabilizer for polyolefins; and

wherein said composition has a shear independent melt viscosity at 190° C. of above about 2.9×10^6 centipoise.

4,211,693

PEPTIDES WITH PARA-SUBSTITUTED PHENYLALANINE

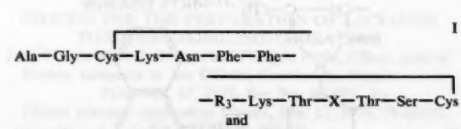
Jean E. F. Rivier; Marvin R. Brown, and Wylie W. Vale, Jr., all of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 834,221, Sep. 20, 1977, abandoned. This application Dec. 7, 1978, Ser. No. 967,505

Int. Cl.[2] C07C *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 S **9 Claims**

1. A peptide selected from the group consisting of



and the pharmaceutically-acceptable salts thereof, wherein

R_3 is selected from the group consisting of Trp and D-Trp; and

X is selected from the group consisting of parahalogenated Phe and para-methoxylated Phe.

4,211,694

DEFLAVORING VEGETABLE SEED MATERIALS

Rudolph W. Youngquist, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 7, 1978, Ser. No. 922,921

Int. Cl.[2] A23J *1/14*

U.S. Cl. 260—123.5 **10 Claims**

1. A process for deflavoring vegetable seed material, comprising:

(a) suspending comminuted vegetable seed material in an aqueous solution comprising an electrolyte selected from the group consisting of alkali metal halides and alkali metal phosphates, at a concentration greater than about 1%, and a carbohydrate, at a concentration greater than about 1%, said solution having a water activity of less than about 0.90, and

(b) separating the vegetable seed material from the solution.

4,211,695

PROCESS FOR THE TREATMENT OF COMMINUTED OATS

Richard W. Oughton, Odessa, Canada, assignor to Du Pont of Canada, Limited, Montreal, Canada

Continuation-in-part of Ser. No. 747,734, Dec. 6, 1976, abandoned. This application Jan. 26, 1979, Ser. No. 6,766

Claims priority, application United Kingdom, Dec. 16, 1975, 51498/75

Int. Cl.[2] A23J *1/12*

U.S. Cl. 260—123.5 **25 Claims**

1. A process for the separation of comminuted oats into fractions differing in composition, said process comprising:

(a) admixing comminuted dehulled oats or matter derived therefrom with an organic solvent in the form of a slurry, said solvent being selected from the class consisting of pentane, hexane, heptane, cyclohexane, alcohols having 1–4 carbon atoms, and mixtures thereof capable of extracting oat oil from said oats;

(b) forming a slurry of said admixture of comminuted oats and solvent; and

(c) subjecting the slurry to the influence of centrifugal force whereby the comminuted oats in said slurry are separated into at least two fractions, said fractions differing in composition.

4,211,696

DISPERSE MONOAZO DYESTUFFS DERIVED FROM 3,5-DINITRO-2-AMINO THIOPHENE AS DISAZO COMPONENT AND AN ARYLAMINE COUPLING COMPONENT

David B. Baird; Alan T. Costello; Brian R. Fishwick; Robert D. McClelland, and Peter Smith, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

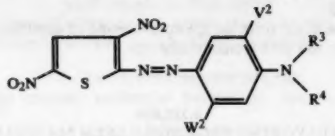
Continuation-in-part of Ser. No. 488,242, Jul. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 324,189, Jan. 16, 1973, abandoned. This application Feb. 9, 1976, Ser. No. 656,593

Claims priority, application United Kingdom, Jan. 28, 1972, 4046/72; Dec. 14, 1972, 57675/72

Int. Cl.[2] C09B *29/08, 29/26;* **D06P** *1/18, 3/54*

U.S. Cl. 260—152 **3 Claims**

1. A disperse monoazo dystuff, free from carboxylic and sulphonic acid groups, which is of the formula:



wherein V^2 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy;

W^2 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, chlorine, bromine and trifluoromethyl;

R^3 is selected from the group consisting of hydrogen, lower alkyl, cyano lower alkyl, lower alkyl carbonyloxy lower alkyl, lower alkoxycarbonyl lower alkyl, lower alkoxy lower alkoxycarbonyl lower alkyl, lower alkoxy lower alkyl and phenyl lower alkyl;

and R^4 is selected from the group consisting of lower alkyl, hydroxy lower alkyl, cyano lower alkyl, lower alkyl carbonyloxy lower alkyl, lower alkoxy carbonyl lower alkyl, lower alkoxy lower alkoxy carbonyl lower alkyl, lower alkoxy lower alkoxy lower alkoxycarbonyl lower alkyl, lower alkoxy lower alkyl and phenyl lower alkyl.

4,211,697

AZOANILINO-TOLUENE SULFONAMIDOALKYLENEAMINE CATIONIC DYES FOR PAPER

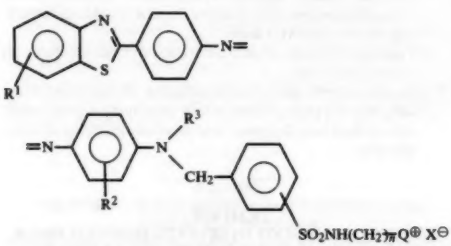
Kishor A. Desai, Lock Haven, Pa., assignor to American Color & Chemical Corporation, Charlotte, N.C.

Filed Jan. 18, 1979, Ser. No. 4,444

Int. Cl.[2] **C09B** *29/08*

U.S. Cl. 260—158 **2 Claims**

1. A cationic dye characterized by outstanding affinity for paper pulp, and having the structural formula:



wherein

R^1 is H or CH_3;

R^2 is H, lower alkyl, lower alkoxy, chloro or bromo;

R^3 is lower alkyl or cyano lower alkyl;

Q is $N(R^4)_3$, where R^4 is lower alkyl, or is

n is an integer of 2–4; and

X is chloro, bromo, methosulfate, ethosulfate, or methanesulfonate.

4,211,698

DISAZO DYES CONTAINING AN ACETOACETANILIDE MIDDLE COMPONENT

Rudolf Hurter, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

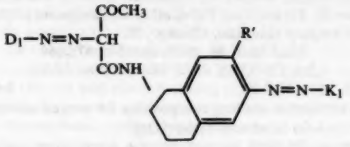
Filed Aug. 17, 1978, Ser. No. 934,551

Claims priority, application Luxembourg, Aug. 23, 1977, 78014

Int. Cl.[2] **C09B** *31/02, 33/02, 62/08, 62/50*

U.S. Cl. 260—176 **5 Claims**

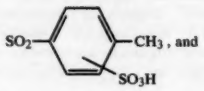
1. Azo dyes of the formula



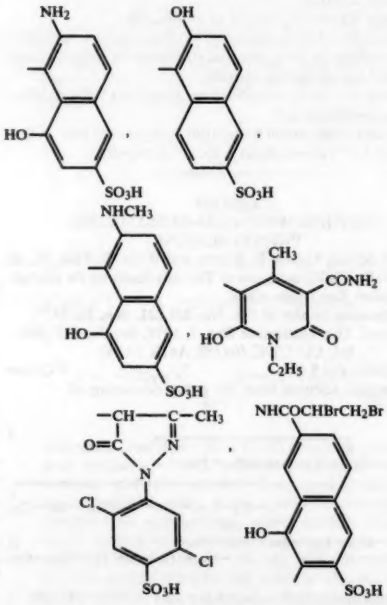
wherein

D_1 represents a phenyl radical which is further substituted by one or more of CH_3, SO_3H, COOH, OCH_3, OH, Cl, NO_2, SO_2NH_2 $NHCOCHBrCH_2Br$,

R′ represents SO_3H, COOH or



K_1 represents one of the following formulae:



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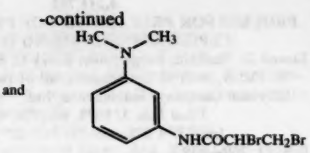


4,211,699
ISOCYANATE ADDUCT DIOLS

Hans D. Winkelmann; Karlheinz Wolf, both of Cologne; Harald Oertel, Odenthal, and Norbert Weimann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,740

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 2707660

Int. Cl.[2] C07D *223/10*

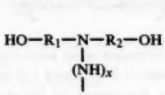
U.S. Cl. 260—239.3 R **12 Claims**

1. An isocyanate adduct diol corresponding to the formula

M—CO—NH—D′—NH—CO—A

in which

M corresponds to the formula

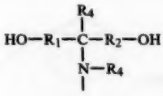


where

R_1 and R_2 may be the same or different and represent a straight chain or branched alkylene radical with up to 12 carbon atoms or a cyclohexylene radical, and

x=0 or 1 or

M corresponds to the formula



in which

R_1 and R_2 are the same or different and each represents a straight chain or branched alkylene radical with up to 12 carbon atoms or a cyclohexylene radical, and

R_4 represents hydrogen and/or C_1–C_4 alkyl

D′ represents a divalent radical derived from diphenyl methane-4,4′-diisocyanate, tolylene-2,4-diisocyanate, tolylene-2,6-diisocyanate, phenylene-1,3-diisocyanate, phenylene-1,4-diisocyanate or diphenyl ether-4,4′-diisocyanate and

A is an isocyanate masking group derived from pyrrolidone, α-piperidone, ε-caprolactam, methyl caprolactam, γ-ethyl caprolactam or γ-tert.-butyl caprolactam.

4,211,700
PROCESS FOR THE PREPARATION OF LACTAMES THROUGH OXIME ISOMERIZATION

Jean-Claude Michel, Orthez, and Philippe Potin, Billere, both of France, assignors to Ato Chimie, Courbevoie, France

Filed Feb. 15, 1979, Ser. No. 12,495

Claims priority, application France, Feb. 17, 1978, 78 04571

Int. Cl.[2] C07D *201/04*

U.S. Cl. 260—239.3 A **8 Claims**

1. A process for preparing lactames through oxime isomerization in a sulfuric solution, said reaction being called the Beckmann rearrangement, which process may be more particularly applied to sulfuric solutions of oximes obtained through photonitrozation and in which during the rearrangement stage the acid index of the mixture is raised to a level above that of the sulfuric solution feed, wherein the increase of the sulfuric acid index is effected by:

(a) evaporating part of the water contained in the reaction medium;

(b) adding sulfuric anhydride or oleum to the reaction medium; or

(c) evaporating a part of the water contained in the reaction medium and adding sulfuric anhydride or oleum to the reaction medium.

4,211,701
SPIRONOLACTONE PROCESS

Joseph M. Timko, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

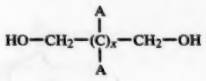
Filed Apr. 13, 1979, Ser. No. 29,553

Int. Cl.[2] C07J *21/00*

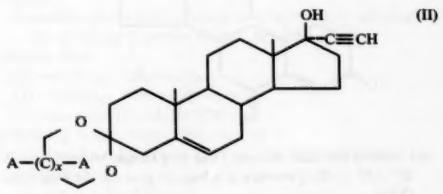
U.S. Cl. 260—239.57 **40 Claims**

1. A process for producing spironolactone (VIII) which comprises

(1) reacting ethisterone (I) with a glycol of the formula:

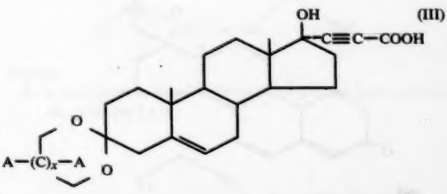


to give the hydroxy glycol (II)



(II)

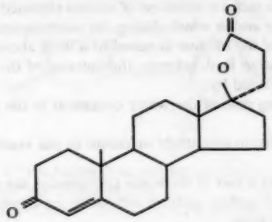
(2) carboxylating the hydroxy glycol (II) by reaction with carbon dioxide in the presence of R-Metal to give the acid glycol (III)



(III)

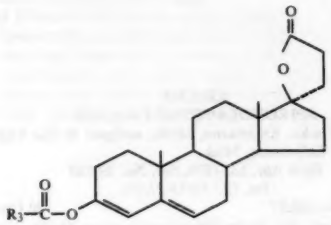
(3) reducing and cyclizing the acid glycol (III) by hydrogenation in the presence of a hydrogenating catalyst followed by acidification to give the lactone (IV)

(IV)



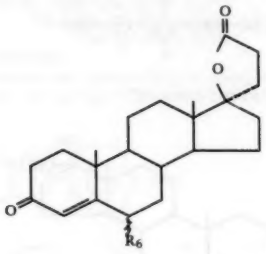
(4) esterifying the lactone (IV) by reaction with an esterifying agent selected from the group consisting of an anhydride of the formula $(R_3—CO)_2O$ or a compound of the formula $CH_3—C(CH_2)—OCOR_3$ to give the ester (V)

(V)



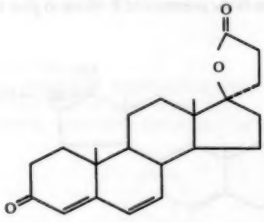
(5) halogenating the ester (V) by reaction with a halogenating agent to give the halo lactone (VI)

(VI)



(6) heating the halo lactone (VI) in a temperature range of 20°–150° in the presence of a base to give the Δ4,6-lactone (VII)

(VII)



and

(7) thiolacetylating with thiolacetic acid to give spironolactone (VIII) where A, x, R, Metal, R_3 and R_6 are defined in the specification.

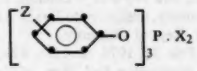
4,211,702

PROCESS FOR PREPARATION OF PENICILLIN AND CEPHALOSPORIN IMINO HALIDES

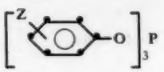
Lowell D. Hatfield, Bargersville; Larry C. Blaszczak, and Jack W. Fisher, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 1, 1979, Ser. No. 8,470
Int. Cl.² C07D *499/10, 501/02, 265/12*
U.S. Cl. 260—239.1 **24 Claims**

1. A process for preparing penicillin or cephalosporin imino halides which comprises reacting a C-6 acylamino penicillin or a C-7 acylamino cephalosporin with about 1.0 to about 2.0 equivalents of a halogenating compound of the formula



wherein X is Cl or Br, and Z is hydrogen, halo, C_1–C_4 alkyl or C_1–C_4 alkoxy, which is the kinetically controlled product of the reaction of equivalent amounts of a triaryl phosphite of the formula



and chlorine or bromine in an inert organic solvent, in the presence of about 1.0 to about 1.2 equivalents of a tertiary amine base per equivalent of halogenating compound employed, in a substantially anhydrous inert organic solvent at a temperature of about 30° C. or below, with the proviso that when the C-6 acylamino penicillin or C-7 acylamino cephalosporin is substituted by hydroxy, amino or carboxy groups those groups are first protected with conventional hydroxy, amino or carboxy protecting groups.

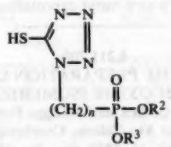
4,211,703

PHOSPHONOALKYL AND ESTERIFIED PHOSPHONOALKYL SUBSTITUTED TETRAZOLE THIOLS

David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 737,971, Nov. 2, 1976, Pat. No. 4,112,086.
This application Aug. 14, 1978, Ser. No. 933,362
Int. Cl.² C07D *257/04*
U.S. Cl. 548—112 **7 Claims**

1. A compound of the formula:



in which:

n is one to five; and

R^2 and R^3 are each hydrogen or alkyl of from one to four carbon atoms.

4,211,704

METHOD FOR PRODUCING 2,3,3-TRIMETHYLINDOLENINE

Nobumssa Ohtake, Yokohamashi; Ryo Yoshizawa, Yokoshukashi, and Isao Koga, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Aug. 2, 1978, Ser. No. 930,387
Claims priority, application Japan, Aug. 29, 1977, 52-103381
Int. Cl.[2] C07D *209/08*
U.S. Cl. 260—319.1 **1 Claim**

1. A method for producing 2,3,3-trimethylindolenine which comprises mixing aniline with 3-chloro-3-methylbutane-2-one in a mol ratio of 3:1–10:1; reacting the resulting mixture at a temperature of 60°–120° C. for 2–20 hours; thereafter elevating the temperature of the reaction liquid; and maintaining the liquid at the reflux temperature of aniline for 0.5–2 hours to complete the reaction.

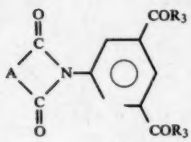
4,211,705

IMIDYL-BENZENEDICARBOXYLIC ACID DERIVATIVES

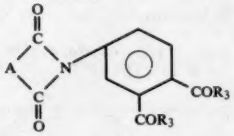
Martin Roth, Basel; Vratislav Kvita, Muttenz, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

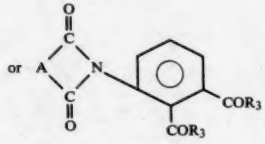
Division of Ser. No. 696,347, Jun. 15, 1976, Pat. No. 4,134,895.
This application Oct. 24, 1978, Ser. No. 954,277
Claims priority, application Switzerland, Jun. 18, 1975, 7952/75
Int. Cl.[2] C07D *209/04, 209/96*
U.S. Cl. 260—326 C **6 Claims**

1. A compound of the formula


(Ia)

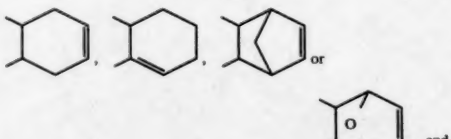
or


(Ib)


(Ib),

or

wherein A denotes



R_3 denotes chlorine, hydroxyl, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two to five halogen atoms; alkoxy with 1 to 18 carbon atoms or an $—O^-M^+$ group, in which M^+ represents an alkali metal cation, a trialkylammonium cation with 3 to 24 carbon atoms or a quaternary ammonium cation.

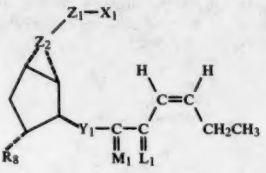
4,211,706

9-DEOXY-9α,6-NITRILO OR 6,9α-IMINO-17,18-DIDEHYDRO-PGF COMPOUNDS

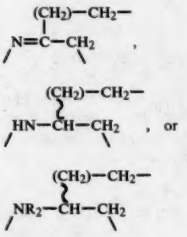
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 13, 1978, Ser. No. 951,095
Int. Cl.[2] C07D *209/52*
U.S. Cl. 260—326.27 **2 Claims**

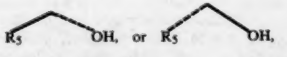
1. A prostacyclin analog of the formula


II

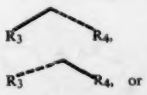
wherein Z_2 is



wherein
R_2 is alkyl of one to 4 carbon atoms, inclusive, or alkylcarbonyl of one to 4 carbon atoms, inclusive;
wherein Z_1 is
(1) $—(CH_2)_g—CH_2—CH_2—$,
(2) $—(CH_2)_g—CH_2—CF_2—$, or
(3) trans$—(CH_2)_g—CH=CH—$,
wherein g is the integer zero, one, or 2;
wherein R_8 is hydrogen, hydroxy, or hydroxymethyl;
wherein Y_1 is
(1) trans—CH=CH— or
(2) $—CH_2CH_2—$,
wherein
M_1 is



wherein
R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive, wherein L_1 is



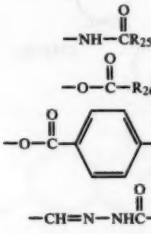
a mixture of

and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein X_1 is

(1) -$COOR_1$ wherein R_1 is hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position



(a) (b) (c) (d)

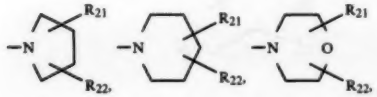
wherein R_{25} is methyl, phenyl, acetomidophenyl, benzamidophenyl, or $—NH_2$; R_{26} is methyl, phenyl, $—NH_2$, or methoxy; and R_{27} is hydrogen or acetamido; inclusive, or a pharmacologically acceptable cation;

(2) $—CH_2OH$; or

(3) $—COL_4$, wherein L_4 is

(a) amino of the formula-$NR_{21}R_{23}$, wherein $R_{21}$and R_{22} are hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro; carboxyalkyl of one to four carbon atoms, inclusive; carbamoylalkyl of one to four carbon atoms, inclusive; cyanoalkyl of one to four carbon atoms, inclusive, acetylalkyl of one to four carbon atoms, inclusive; benzoylalkyl of one to four carbon atoms, inclusive; benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms inclusive; hydroxy, alkoxy of one to 3 carbon atoms, inclusive; carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive; or nitro; pyridyl; pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; or alkoxy of one to 3 carbon atoms, inclusive; pyridylalkyl of one to 4 carbon atoms, inclusive; pyridylalkyl of one to 4 carbon atoms, inclusive; pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive; hydroxy, alkoxy of one to 3 carbon atoms, inclusive; hydroxyalkyl of one to 4 carbon atoms, inclusive; dihydroxyalkyl of one to 4 carbon atoms, and trihydroxyalkyl of one to 4 carbon atoms, with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

(b) cycloamino selected from the group consisting of



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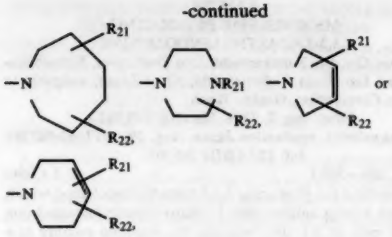


wherein R_{21} and R_{22} are as defined above;

(c) carbonylamino of the formula $—NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is as defined above; or

(d) sulphonylamino of the formula $—NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined above; and the pharmacologically acceptable acid addition salts thereof when R_2 is not alkylcarbonyl and R_1 is not a pharmacologically acceptable cation.

4,211,707

PROCESS FOR HYDROLYTICALLY CLEAVING O-SULFO THIENAMYCINS

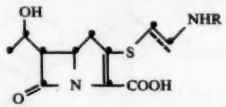
Ronald W. Ratcliffe, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 10, 1978, Ser. No. 932,739

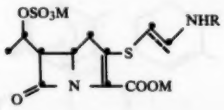
Int. Cl.[2] C07D *487/04*

U.S. Cl. 260—326.31 **1 Claim**

1. A process for preparing a compound having the structure:



and its pharmaceutically acceptable salts and esters which comprises hydrolyzing a compound having the formula:



wherein M is $H^{\oplus}$, an alkali or alkaline earth metal cation or an organic cation; R is hydrogen or acetyl and the dotted line indicates provision for both saturated and unsaturated species; the hydrolyzing is conducted in a solvent selected from the group consisting of: dioxane, dimethylformamide, dimethylsulfoxide, or pyridine in the presence of 0.1 to 1% water at a temperature of from 25° to 100° C.

4,211,708
AMINOPYRROLE DERIVATIVES

Giorgio Tarzia, Rome, and Gianbattista Panzone, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

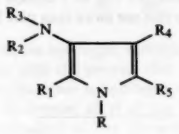
Division of Ser. No. 750,759, Dec. 15, 1976, Pat. No. 4,140,696, which is a continuation-in-part of Ser. No. 716,749, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 492,564, Jul. 29, 1974, abandoned. This application Nov. 13, 1978, Ser. No. 960,385

Claims priority, application United Kingdom, Aug. 22, 1973, 39790/73

Int. Cl.[2] C07D *207/44*

U.S. Cl. 260—326.46 8 Claims

1. A compound of the formula



I

wherein:

R is selected from hydrogen, (C_{1-4})alkyl, benzyl and chlorobenzyl;

R_1 is selected from hydrogen, (C_{1-4})alkyl, phenyl and phenyl substituted by a radical selected from methyl, ethyl, methoxy, ethoxy, benzyloxy, fluoro, chloro and bromo;

R_2 and R_3 individually represent hydrogen, (C_{1-4})alkyl or, taken together, represent an isopropylidene, a benzylidene or a chlorobenzylidene radical;

R_4 is selected from carbo(C_{1-3})alkoxy; carbamoyl, methylcarbamoyl and phenylcarbamoyl;

R_5 represents carbo(C_{1-3})alkoxy or carbamoyl; or a salt thereof with a pharmaceutically-acceptable acid.

4,211,709
AMINOPYRROLE DERIVATIVES

Giorgio Tarzia, Rome, and Gianbattista Panzone, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

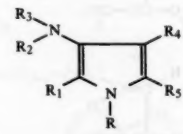
Division of Ser. No. 750,759, Dec. 15, 1976, Pat. No. 4,140,696, which is a continuation-in-part of Ser. No. 716,749, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 492,564, Jul. 29, 1974, abandoned. This application Nov. 13, 1978, Ser. No. 960,386

Claims priority, application United Kingdom, Aug. 22, 1973, 39790/73

Int. Cl.[2] C07D *207/44*

U.S. Cl. 260—326.47 4 Claims

1. A compound of the formula



I

wherein:

R is selected from hydrogen, (C_{1-4})alkyl, benzyl and chlorobenzyl;

R_1 selected from hydrogen, (C_{1-4})alkyl, phenyl and phenyl substituted by a radical selected from methyl, ethyl, methoxy, ethoxy, benzyloxy, fluoro, chloro and bromo;

R_2 and R_3 individually represent hydrogen, (C_{1-4})alkyl or, taken together, represent an isopropylidene radical;

R_4 is selected from carbamoyl, methylcarbamoyl and phenylacarbamoyl;

R_5 represents hydrogen, (C_{1-4})alkyl or trifluoromethyl or a salt thereof with a pharmaceutically-acceptable acid.

4,211,710
PROCESS OF PREPARING 3-BROMOPHTHALIDE

Klaus-Dieter Steffen, Hennef, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf bez. Cologne, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 901,917

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721142

Int. Cl.[2] C07D *307/88*

U.S. Cl. 260—343.3 R 9 Claims

1. Process of producing 3-bromophthalide which comprises contacting o-toluic acid with bromine or a substance supplying bromine at a temperature of 70° to 260° C. and for a time sufficient for formation of the 3-bromophthalide and HBr, the molar ratio of o-toluic acid to bromine being 1:2 to about 1:2.2, to produce the 3-bromophthalide from the o-toluic acid and bromine or substance supplying bromine in a single step.

4,211,711
METHOD OF PREPARING PHTHALIDE

Helmut aus der Fünten, Niederkassel, and Wilhelm Vogt, Köln-Ste,uml/u/ lz, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 931,074

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735600

Int. Cl.[2] C07D *307/88*

U.S. Cl. 260—343.3 R 6 Claims

1. Method for preparing phthalide, which comprises reacting phthalide substituted in position 3 with hydroxyl, methoxy or acetoxy groups in an inert organic solvent with hydrogen in the presence of a hydrogenation catalyst.

4,211,712
COMPLEX COMPOUND FOR THE TREATMENT OF DISEASES DISCLOSING ABNORMAL BLOOD PICTURES

Even Marstrand, Humlebaek, Denmark

Filed Dec. 29, 1977, Ser. No. 865,416

Claims priority, application United Kingdom, Jan. 17, 1977, 01861/77

Int. Cl.[2] C07D *307/62*

U.S. Cl. 260—343.7 2 Claims

1. A compound being a complex combination of ascorbic acid, trivalent titanium, and divalent copper, the ratio of the constituents of the complex compound being 36 mol ascorbic acid to 1 mol Ti^{+++} to 6 mol Cu^{++}.

4,211,713
AROMATIC ANALOGS OF 4,5,13,14-TETRADEHYDRO-PGI$_1$ COMPOUNDS

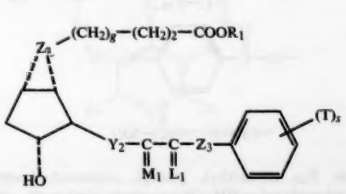
Herman W. Smith, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 821,536, Aug. 3, 1977. This application Jun. 14, 1978, Ser. No. 915,347

Int. Cl.[2] C07D *307/93*

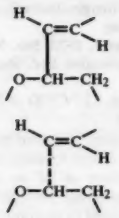
U.S. Cl. 260—346.73 43 Claims

1. A prostacyclin analog of the formula

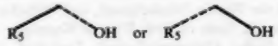


wherein Y_2 is —C≡C—;

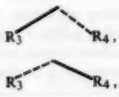
wherein Z_2 is



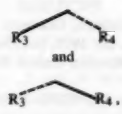
wherein g is the integer zero, one, or 2;
wherein M_1 is



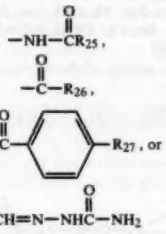
wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive,
wherein L_1 is



or a mixture of

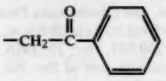


wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position by



(a)
(b)
(c)
(d)

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $-NH_2$; R_{26} is methyl, phenyl, $-NH_2$, or methoxy; and R_{27} is hydrogen or acetamido; inclusive, i.e.,



phenacyl substituted in the para position by chloro, bromo, phenyl, or benazmido; or a pharmacologically acceptable cation; and
wherein Z_3 is oxa or $-(CH_2)_h-$,
wherein h is the integer zero to 3, inclusive;
wherein s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl.

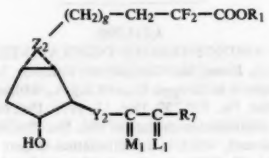
4,211,714

2,2-DIFLUORO-TRANS-4,5,13,14-TETRAHYDRO-PGI$_1$ COMPOUNDS

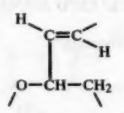
Herman W. Smith, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 821,536, Aug. 3, 1977. This application Jun. 14, 1978, Ser. No. 915,349
Int. Cl.^{2} C07D *307/93*
U.S. Cl. 260—346.73 **27 Claims**

1. A prostacyclin analog of the formula

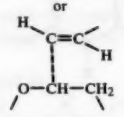


wherein Y_2 is $-C\equiv C-$.
wherein Z_2 is



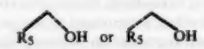
(1)

or

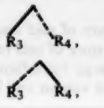


(2)

wherein g is the integer zero, one, or 2;
wherein M_1 is



wherein R_5 is hydrogen or alkyl with one to 4 carbon atoms, inclusive;
wherein L_1 is

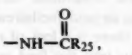


or a mixture of

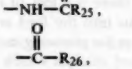
and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

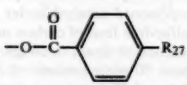
wherein R_1 is hydrogen; alkyl of one to 12 carbon atoms, inclusive; cycloalkyl of 3 to 10 carbon atoms, inclusive; aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms; phenyl substituted in the para position by



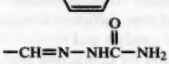
(a)



(b)

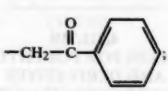


(c)



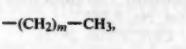
(d)

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or $-NH_2$; R_{26} is methyl, phenyl, $-NH_2$, or methoxy; and R_{27} is hydrogen or acetamido; phenacyl, i.e.,

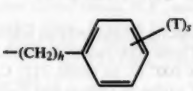


phenacyl substituted in the para position by chloro, bromo, phenyl, or benzamido; or a pharmacologically acceptable cation;

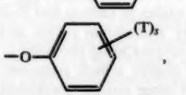
wherein R_7 is



(1)



(2)



(3)

wherein m is the integer one to 5, inclusive, h is the integer zero to 3, inclusive; s is the integer zero, one, 2, or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl.

4,211,715

EPOXY RESINS AND PROCESS FOR PRODUCING THE SAME

Shuichi Kanagawa, Osaka; Shinji Nakao, Sakai; Kiyoshi Nakai; Kunimasa Kamio, both of Toyonaka; Shunsuke Matsushima, Otsu; Kazuhiko Hata, Niihama, and Kentaro Mashita, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

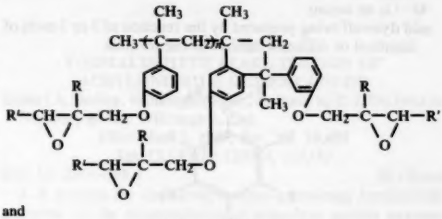
Filed May 26, 1978, Ser. No. 909,785

Claims priority, application Japan, May 27, 1977, 52-62407

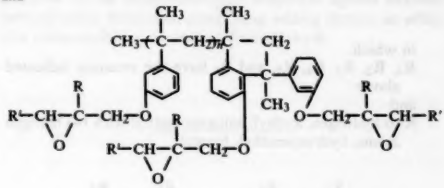
Int. Cl.[2] C07D *303/28*

U.S. Cl. 260—348.64 **2 Claims**

1. An epoxy resin of the formulae,



and



wherein R and R' are each a hydrogen atom or an alkyl group having 1 to 3 carbon atoms and n is a mean value satisfying the equation, $0<n\leqq 2$.

4,211,716

PROCESS FOR ISOLATING TRIARYLMETHANE DYESTUFFS

Karl H. Hermann, Leverkusen, and Hans-Lothar Dorsch, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

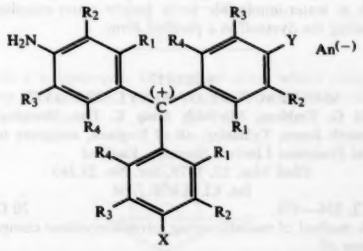
Filed May 24, 1978, Ser. No. 909,190

Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723774

Int. Cl.[2] C09B *11/10, 11/22*

U.S. Cl. 260—391 **8 Claims**

1. In a process for preparing and isolating a dyestuff of the formula



in which

R_1, R_2, R_3, and R_4, independently of each other, are hydrogen, alkyl, halogenoalkyl, halogen, alkoxy, alkylmer-

capto, alkylsulphonyl, alkoxysulphonyl, alkylcarbonyl, alkoxycarbonyl, nitro, or cyano;

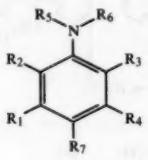
X and Y, independently of each other, are

R_5 and R_6, independently of each other, are hydrogen, alkyl, halogenoalkyl, cyanoalkyl, cycloalkyl, aryl, or aralkyl; the adjacent substitutents

X and R_2, Y and R_2, NH_2 and R_2, and R_1 and R_2, in addition to the above definitions are, a 5-membered or 6-membered ring; and

$A^{(-)}$ is an anion;

said dyestuff being prepared by the reaction of 2 or 3 mols of identical or different amines of the formula

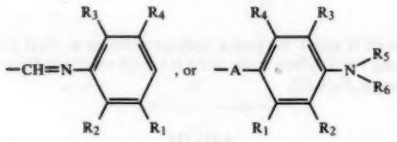


in which

R_1, R_2, R_3, R_4, R_5, and R_6 have the meaning indicated above

and

R_7 is hydrogen, methyl, halogenomethyl with 1–3 halogen atoms, hydroxymethyl, formyl,



wherein

A is CO, CH_2 or CH-R_8; and

R_8 is hydroxyl, C_1–C_4-alkoxy, amino, mono- or di-C_1–C_4-alkylamino, or halogen;

in the presence of an oxidizing agent and an oxidation catalyst at temperatures between 110° C. and 190° C. over a period of 4 to 24 hours, and under catalysis by mineral acids or Lewis acids, whereby the central C atom or the triarylmethane dyestuff is provided either by R_7 or one mol of an additional substance which provides the central C atom; the improvement in the isolation process comprising introducing the hot reaction melts obtained by this process at 0°–80° C. into a two-phase system consisting of water and an organic solvent, which is water-immiscible or is barely water-miscible and separating the dyestuff in a purified form.

4,211,717
MANUFACTURE OF ALKYL SILICATES

Harold G. Emblem, Mirfield; Anup K. Das, Bromley, and Kenneth Jones, Tyldesley, all of England, assignors to Zirconal Processes Limited, Bromley, England

Filed Mar. 23, 1979, Ser. No. 23,243
Int. Cl.[2] C07F *7/04*
U.S. Cl. 556—470 **20 Claims**

1. A method of manufacturing tetraalkoxysilane comprising the steps of:

preparing a reaction mixture comprising a catalytic solution, a silicon or silicide, and an alkanol,

maintaining a high thermal capacity in said reaction mixture by maintaining a large volume of catalytic solution relative to the silicon or silicide present in said reaction mixture,

raising the temperature of said reaction mixture and maintaining the temperature of said reaction mixture at a level effective to discharge tetraalkoxysilane as a vapour together with alkanol vapour and hydrogen gas.

4,211,718
METHANATION PROCESS

Jack N. Finch, and Forrest L. Poska, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 24, 1978, Ser. No. 927,080
Int. Cl.[2] C07C *1/04*
U.S. Cl. 260—449 M **9 Claims**

1. A process comprising contacting a sulfur-containing feedstream comprising carbon monoxide and hydrogen with a catalytically effective amount of a supported catalyst consisting of at least one of iridium and rhodium under methanation conditions and in the presence of a finite, effective, small amount of steam sufficient to increase methanation activity when said activity is affected by sulfur poisoning so that a predominant amount of carbon monoxide and hydrogen in the feedstream is converted to methane.

6. In a process comprising contacting a sulfur-containing feedstream of carbon monoxide and hydrogen with a supported catalyst consisting of at least one of iridium and rhodium under methanation conditions such that said carbon monoxide and hydrogen in said feedstream are converted to methane, and in which there is a loss of methanation activity caused by entry of sulfur into the feed and poisoning of said catalyst, the improvement for restoring methanation activity in situ of the sulfur-poisoned catalyst which comprises

contacting said sulfur-poisoned catalyst under methanation conditions with a sulfur-free feed of carbon monoxide and hydrogen in the presence of steam in an amount ranging from about 1 to about 30 mole percent of the synthesis feed for a period of time sufficient to substantially restore the activity of said catalyst and

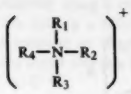
continuing methanation by contacting said catalyst having restored methanation catalytic activity with carbon monoxide and hydrogen under methanation conditions such that a predominant amount of said carbon monoxide and hydrogen is converted to methane.

4,211,719
CATALYTIC PROCESS FOR POLYHYDRIC ALCOHOLS AND DERIVATIVES

Wellington E. Walker, Charleston; David R. Bryant, and Earle S. Brown, Jr., both of South Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 877,589, Feb. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 712,152, Aug. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 488,139, Jul. 12, 1974, abandoned. This application Feb. 5, 1979, Ser. No. 9,352
Int. Cl.[2] C07C *27/06, 29/16*
U.S. Cl. 260—449 L **10 Claims**

1. In the process of making alkane polyols which comprises reacting at a pressure of from 1000 psia to about 15,000 psia and a temperature of about 100° C. to about 375° C., a mixture consisting essentially of oxides of carbon and hydrogen in the presence of a quaternary ammonium cation and a rhodium carbonyl complex, said complex being provided to the reaction as a rhodium carbonyl cluster which possesses an infrared spectrum which exhibits three intense wavelength bands between about plus and minus 10 cm^{-1} of about 1868 cm^{-1}, about 1838 cm^{-1}, and about 1785 cm^{-1}, wherein the improvement comprises providing to the reaction mixture about 0.8 to about 2.5 moles of the quaternary ammonium cation for every six atoms of rhodium present in the reaction mixture, and said quaternary ammonium cation has the formula



where R_1, RHd 2, R_3 and R_4 is a straight or branched chain alkyl having from one to 20 carbon atoms, a cycloaliphatic, aryl, alkylaryl or aralkyl group, or a polyalkylene ether group of the formula, $-(C_nH_{2n}O)_x-OR$, wherein n has an average value from 1 to 4, x has an average value from 2 to about 150, and R is hydrogen or alkyl having from 1 to 12 carbon atoms.

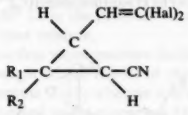
4,211,720

PREPARATION OF CYANO-SUBSTITUTED CYCLOPROPANE DERIVATIVES

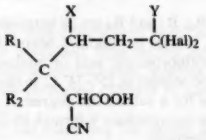
Helena Austermühle-Bertola, Amsterdam, Netherlands, assignor to Shell International Research Maatschappij B.V., Netherlands

Filed May 30, 1978, Ser. No. 910,779
Int. Cl.[2] C07C *120/00, 121/48*
U.S. Cl. 260—464 **7 Claims**

1. A process for preparing cyano-substituted derivatives of general formula



wherein Hal represents a flourine, chlorine or bromine atom and R_1 and R_2 each independently represent an alkyl group of one to four carbon atoms, which comprises contacting a compound of general formula



wherein X and Y each independently represents a chlorine or bromine atom under anhydrous conditions with a base and a polar aprotic solvent at temperatures from about 100° C. to about 150° C.

4,211,721

PROCESS FOR THE PREPARATION OF AROMATIC NITRILES

Byron R. Cotter, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Dec. 4, 1978, Ser. No. 966,433
Int. Cl.[2] C07C *120/04*
U.S. Cl. 260—465 G **6 Claims**

1. A method of producing aromatic nitriles which comprises the steps of reacting a nuclearly halogenated carbocyclic compound of the benzene or naphthalene series having from 1 to 4 halogen atoms substituents selected from the group of chlorine, bromine and iodine, to a temperature of at least 100° C. with potassium cyanide in the presence of a catalyst composition comprised of:

(a) an ether component selected from the group consisting of 18-crown-6 ether, polyethers, alkyoxypolyethers and mixtures thereof having a molecular weight between about 200 and about 25,000, and

(b) a palladium salt complex comprised of:

(1) a palladium salt selected from palladium iodide, chloride, bromide and mixtures thereof, and

(2) an organophosphine selected from the group consisting of alkyarylphosphines and triarylphosphines containing from about 8 to about 80 carbon atoms.

4,211,722

FORMALDEHYDE STABILIZATION OF ACRYLONITRILE AGAINST COLOR

Robert A. Smiley, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Mar. 7, 1979, Ser. No. 18,405
Int. Cl.[2] C07C *120/14, 121/32*
U.S. Cl. 260—465.3 **10 Claims**

1. A process for stabilizing oxazole-containing acrylonitrile prepared by the ammoxidation of propylene against oxazole-induced color formation, comprising adding thereto an effective color-inhibiting amount of formaldehyde.

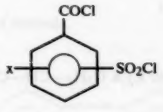
4,211,723

PROCESS FOR PRODUCING CHLOROSULFONYLBENZOYLCHLORIDE

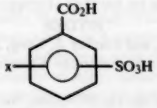
Wataro Koike; Takahiro Kimoto, both of Shizuoka, and Sadayoshi Matsui, Shimizu, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 674,178, Apr. 6, 1976, abandoned. This application Jun. 20, 1978, Ser. No. 917,255
Claims priority, application Japan, Jun. 11, 1975, 50-70311; Nov. 19, 1975, 50-138988
Int. Cl.[2] C07C *63/14, 143/52*
U.S. Cl. 260—544 K **9 Claims**

1. A process for producing chlorosulfonylbenzoylchloride having the formula



wherein x is hydrogen, halogen, or nitro, which comprises reacting phosgene with an aromatic sulfocarboxylic acid having the formula



or an alkali metal salt or akaline earth metal salt thereof in the presence of 0.01–0.3 mole of dimethylformamide per mole of said aromatic sulfocarboxylic acid.

4,211,724

16-SUBSTITUTED PROSTAGLANDINS

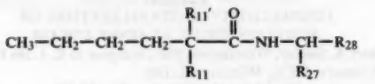
George W. Holland, North Caldwell; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 847,881, Nov. 2, 1977, which is a continuation-in-part of Ser. No. 745,257, Dec. 8, 1976, Pat. No. 4,112,225, which is a continuation-in-part of Ser. No. 683,576, May 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 480,458, Jul. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Jun. 19, 1979, Ser. No. 50,039

Int. Cl.[2] C07C *103/58, 103/34*

U.S. Cl. 260—562 B **6 Claims**

1. Diastereomeric isomers of the formula



wherein R_{11} is fluoro, lower alkyl or trifluoromethyl; R_{11}' is hydrogen, fluoro or lower alkyl; with the proviso that R_{11} and R_{11}' are not the same substituents or n-butyl; R_{27} is

tolyl, naphthyl or phenyl or naphthyl or phenyl substituted with amino, nitro or halo; R_{29} is tolyl, phenyl or naphthyl substituted with halo, amino or nitro; R_{28} is $—CH_2R_{31}$; and R_{31} is hydrogen, lower alkyl, hydroxy or lower alkoxy.

4,211,725

NITROGEN CONTAINING COMPOSITIONS

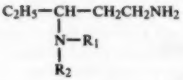
Edward W. Kluger, Pauline; Tien-Kuei Su, and Teresa J. Thompson, both of Spartanburg, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 850,456, Nov. 10, 1977. This application Dec. 7, 1978, Ser. No. 967,391

Int. Cl.[2] C07C *87/14*

U.S. Cl. 260—583 P **2 Claims**

1. A nitrogen containing compound represented structurally as



wherein R_1 is H and R_2 is $C_2H_5—CH—CH_2—CH_2NH_2$.

4,211,726

SYNTHESIS OF SUBSTITUTED 9,10-ANTHRACENE-DICARBOXALDEHYDES AND 9,10-DIHYDRO-9,10-ANTHRACENEDICARBOXALDEHYDES

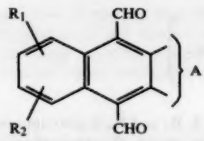
Yang-I Lin, Nanuet, and Stanley A. Lang, Jr., Stony Point, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 16, 1979, Ser. No. 12,678

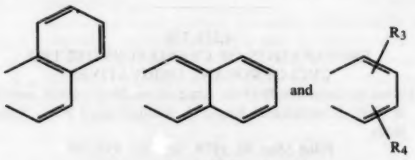
Int. Cl.[2] C07C *45/00*

U.S. Cl. 568—424 **2 Claims**

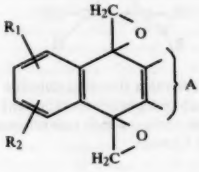
1. A process for the preparation of 9,10-anthracenedicarboxaldehydes of the formula:



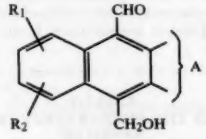
wherein A is a divalent moiety selected from the group consisting of those of the formulae:



and R_1, R_2, R_3 and R_4 are each individually selected from the group consisting-of hydrogen, halogen, hydroxy, nitro, amino, sulfonamido, alkyl having up to 4 carbon atoms and alkoxy having up to 4 carbon atoms which comprises rearranging a dispiro[oxirane-2,9'(10'H)-anthracene-10',2''-oxirane] of the formula:



wherein A, R_1, R_2, R_3 and R_4 are as hereinabove defined with lithium bromide, lithium perchlorate, boron trifluoride, magnesium bromide, trifluoroacetic acid or methanesulfonic acid in an aprotic organic solvent at 25°–74° C. in the dark for a period of time sufficient for a substantial degree of rearrangement to occur forming an intermediate 9-formyl-10-hydroxymethylanthracene of the formula:



wherein A, R_1, R_2, R_3 and R_4 are as hereinabove defined and oxidizing said intermediate with 2–8 mole equivalents of an oxidizing agent in an inert solvent at 0°–100° C. for a period of time sufficient for a substantial degree of oxidation to occur.

4,211,727

REDUCTION OF CARBOXYLIC ACID HALIDES TO ALDEHYDES

Ian D. Entwistle, Sittingbourne, and Robert A. W. Johnstone, Liverpool, both of England, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 15, 1979, Ser. No. 20,782

Int. Cl.[2] C07C *45/00*

U.S. Cl. 568—437 **7 Claims**

1. A process for the reduction of a carboxylic acid chloride

to the corresponding aldehyde which comprises reducing the acid chloride using a complex of cadmium borohydride prepared by mixing a solution or suspension of a cadmium salt with a solution or suspension of sodium borohydride as the reducing agent and at a temperature in the range of from about 35° C. to 0° C.

4,211,728

METHOD OF PREPARING CARBON TETRACHLORIDE

Jean G. Guérin, Grenoble, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation-in-part of Ser. No. 598,739, Jul. 24, 1975, abandoned. This application Dec. 18, 1975, Ser. No. 642,186

Claims priority, application France, Jul. 29, 1974, 74 26228; Jan. 8, 1975, 75 00400

Int. Cl.² C07C *17/00*

U.S. Cl. 260—658 R **11 Claims**

1. A method for preparing carbon tetrachloride of high purity from a crude mixture of lower aliphatic hydrocarbons or their chlorinated or oxygenated derivatives or mixtures of any of these which method includes the steps of

(i) chlorinating said crude mixture at a pressure between about 1 and 10 atmospheres and at a temperature lower than about 160°–200° C. with sufficient chlorine to form a perchlorinated product containing greater than 70% by weight chlorine,

(ii) heating said perchlorinated product at a temperature higher than 250° C. in the presence of excess chlorine to form a first vapor mixture,

(iii) admixing this first vapor mixture further with from 2 to 10 times its weight of the vapors of chlorinated products having the formula C_xCl_y wherein x is equal to not more than 6 and y is equal to not more than 12, to form a second vapor mixture,

(iv) chlorolyzing the second vapor mixture by heating it for at least two seconds at about 450°–600° C. in the presence of molybdenum pentachloride catalyst under a pressure of about 1 to 10 atmospheres, to convert about 9–33% by weight of the second vapor mixture to carbon tetrachloride,

(v) quenching the thus chlorolyzed vapor at about 50° C. to condense the unreacted high-boiling substances and to permit the carbon tetrachloride, gaseous hydrogen chloride and excess unreacted chlorine to pass on in the gaseous state, and

(vi) condensing and collecting the carbon tetrachloride.

4,211,729

COMPOSITIONS CONTAINING DIORGANOPOLYSILOXANES

Klaus Marquardt, Krailling, and Franz-Heinrich Kreuzer, Munich, both of Fed. Rep. of Germany, assignors to Consortium fur Elektrochemische Industrie, GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 25, 1977, Ser. No. 827,502

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1976, 2641201

Int. Cl.² C08L *43/04*

U.S. Cl. 525—106 **13 Claims**

1. A composition containing a diorganopolysiloxane and a copolymer derived from monomers consisting of at least ethylene and vinyl acetate in which the copolymer consists of from 30 to 40 percent by weight of units derived from ethylene, from 56.5 to 70 percent by weight of units derived from vinyl acetate and from 0 to 3.5 percent by weight of units derived from a monomer other than ethylene and vinyl acetate which is capable of being polymerized in the presence of a free radical initiator, said copolymer is prepared in the presence of the diorganopolysiloxane and is present in the composition in an amount of from 65 to 85 percent by weight based on the weight of the copolymer and the diorganopolysiloxane.

4,211,730

ACRYLATE-BASED POLYMERS AND COPOLYMERS AND THEIR USE AS FLAMEPROOFING AGENTS

Norbert Vollkommer, Troisdorf; Egon N. Petersen, Neunkirchen-Seelscheid; Herbert Klinkenberg, Troisdorf-Eschmar, and Werner Schmidt, St. Augustin-Niederberg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 697,190, Jun. 17, 1976, Pat. No. 4,128,709. This application Jul. 10, 1978, Ser. No. 923,425

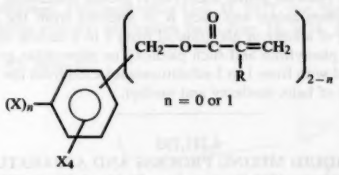
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1975, 2527802; Jun. 21, 1975, 2527803; Oct. 1, 1975, 2543746

The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.

Int. Cl.² C08F *18/00, 4/32;* C08L *67/06*

U.S. Cl. 260—45.75 B **12 Claims**

1. An acrylate or methacrylate copolymer of a monomer having the following formula



wherein

X is bromine or chlorine,

R is hydrogen or methyl.

4,211,731

FLUORENE PHOSPHONITES AND THIOPHOSPHONITES AS ANTIOXIDANTS FOR ORGANIC MATERIALS

Kurt Hofer, Münchenstein; Rudolf Moesch, Stein, and Guenther Tscheulin, Frick, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

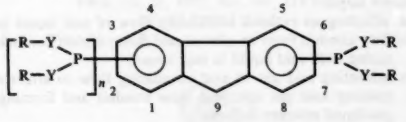
Filed Sep. 11, 1978, Ser. No. 941,300

Claims priority, application Switzerland, Sep. 16, 1977, 11352/77

Int. Cl.² C07F *9/48;* C08K *5/53*

U.S. Cl. 260—932 **5 Claims**

1. A compound of formula,



in which

each R, independently, is (C_{1-18})alkyl; unsubstituted phenyl; or phenyl substituted by 1 to 4 substituents selected from (C_{1-9})alkyl, chloro and bromo, with the provisos that: (1) the maximum number of alkyl substituents is three, said alkyl substituents having an aggregate of carbon atoms not exceeding 12; and (2) the maximum number of substituents selected from chloro and bromo is one;

each Y, independently, is oxygen or sulfur; and

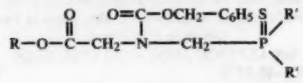
n is 0 or 1.

4,211,732
N-CARBOBENZOXY-N-PHOSPHINOTHIOYLMETHYLGLYCINE ESTERS

John E. Franz, Crestwood, and Robert J. Kaufman, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1978, Ser. No. 973,318
Int. Cl.[1] C07F 9/40; A01N 9/36
U.S. Cl. 260—938 9 Claims

1. A compound of the formula

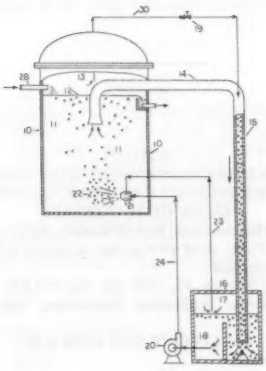


wherein R is a member of the class consisting of alkyl of from 1 to 10 carbon atoms, chloroalkyl of from 1 to 4 carbon atoms and 1 to 3 chlorine atoms, alkoxyalkyl groups containing from 3 to 9 carbon atoms and each R' is selected from the class consisting of alkoxy or alkylthio of from 1 to 6 carbon atoms, phenoxy, phenylthio and such phenoxy or phenylthio groups substituted with from 1 to 5 substituents selected from the class consisting of halo, methoxy and methyl.

4,211,733
GAS-LIQUID MIXING PROCESS AND APPARATUS

Shih-chih Chang, 1725 Davison Ave., Richland, Wash. 99352

Filed Dec. 26, 1978, Ser. No. 972,885
Int. Cl.[2] B01F 3/04
U.S. Cl. 261—36 R 8 Claims



1. A process for mixing gas with liquid in a vessel comprising process steps:

a. affecting an external circulating flow of said liquid in a flow conduit from an inlet of said flow conduit communicating with said liquid in said vessel;

b. admitting said gas to said circulating flow to affect entraining said gas into said flow conduit and forming a gas-liquid mixture therein;

c. separating said gas-liquid mixture into gas phase and liquid phase in a closed chamber disposed substantially below the liquid level of said vessel, thereby the pressure of the separated gas in said chamber being substantially higher than the gas pressure of said vessel;

d. injecting said separated gas of said chamber into said liquid body of said vessel by using the available high pressure of said chamber;

e. returning said separated liquid of said chamber to said liquid body of said vessel by a pump means to form at least one liquid jet stream in said vessel;

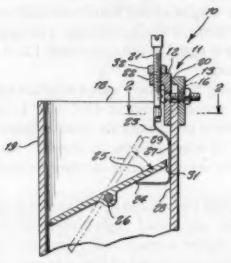
f. agitating said injected gas with said jet stream to accomplish an effective gas-liquid mixing action.

8. A vessel for containing said liquid and said gas, at least one flow conduit for guiding a external circulating flow of said liquid; the inlet of said flow conduit communicating with said liquid of said vessel and the outlet of said flow conduit extending to a predetermined depth below the liquid level of said vessel, a gas conduit communicating said gas of said vessel with said flow conduit for admitting gas to the flowing liquid to form a gas-liquid mixture in said flow conduit, a separating chamber connected to said outlet of said flow conduit for separating said gas-liquid mixture into gas phase and liquid phase, a pump means for circulating said liquid phase of said chamber to said vessel through a second flow conduit and at least one jet nozzle to generate at least one jet stream in said vessel, a second gas conduit communicating the gas space of said separating chamber with said liquid of said vessel at a predetermined depth for injecting said gas phase of said chamber to said liquid of said vessel; said liquid jet agitating said injected gas and thereby accomplishing an efficient gas-liquid mixing in said vessel.

4,211,734
AUTOMOTIVE ANTI-CHOKING DEVICE

Sheng-Hsiung Cheng, P.O. Box 17092, West Hartford, Conn. 06117

Filed Feb. 21, 1979, Ser. No. 13,562
Int. Cl.[2] F02M 1/10
U.S. Cl. 261—39 B 1 Claim



1. An automotive anti-choking device, comprising in combination, a clamp securable to a carburetor air intake pipe, a rotatable screw supported on said clamp, and stop means on said screw for abutting against one side of a pivotable chokeplate of said carburetor, so to limit pivotal travel thereof; said stop means comprising a thin strip of flat stiff steel secured rotatably free on said screw and which extends around an end edge of said chokeplate, and which is hook-shaped at its end to form a stop for said chokeplate, and a pair of oppositely extending, sideward wings on said strip for resting against an inner side of said pipe and prevent rotation of said strip; and said clamp comprising a pair of jaws adjustably held together by screws.

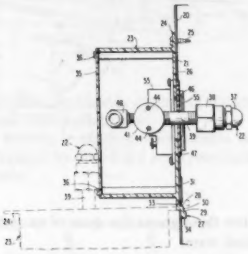
4,211,735
HUMIDIFIER NOZZLE MOUNTING

Gary L. Berlin, Manheim, Pa., assignor to Herrmidifier Company, Inc., Lancaster, Pa.

Filed Jan. 16, 1979, Ser. No. 3,888
Int. Cl.[2] B01F 3/04
U.S. Cl. 261—116 7 Claims

1. A humidifier for universal mounting on a furnace plenum to accommodate different plenum and duct shapes wherein the plenum has an opening in one wall thereof comprising a support adapted to be mounted on said wall adjacent to and overlying said opening in a selected one of four indexed positions relative to the opening, a separate mounting strip adapted to be

mounted on said wall across said opening and near and along one selected edge of the opening defining a longitudinal slot between an edge of said mounting strip and the adjacent one edge of said opening corresponding to the selected indexed position, cooperative means along one side of said support engagable through the slot forming a hinged connection between said wall and said support and enabling the support to be swung away from said wall in one direction while remaining attached thereto, a mounting portion connected substantially normal to and extending away from said support, a solenoid actuated valve, a humidifier nozzle rigidly connected to and



extending from said solenoid actuated valve through said support and said opening and into said furnace plenum, a water supply means coupled with said valve and extending exteriorly of said support, selectively adjustable and lockable rotational connection means between said mounting portion and said solenoid actuated valve through which the angle of said humidifier nozzle is adjusted in a plane normal to said support by rotation of said solenoid actuated valve and locked in selected angular positions relative to said support for optimum efficiency of the humidifier nozzle inside the plenum in the selected indexed position.

4,211,736

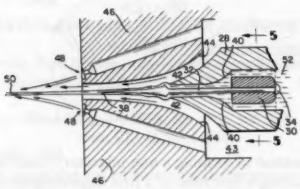
PROCESS FOR FORMING AND TWISTING FIBERS

Rexford H. Bradt, Warsaw, Ind., assignor to Albert L. Jeffers, Fort Wayne, Ind., a part interest

Continuation of Ser. No. 608,881, Aug. 29, 1975, abandoned, and Ser. No. 440,983, Feb. 11, 1974, Pat. No. 3,920,362, which is a continuation of Ser. No. 301,611, Oct. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 96,305, Dec. 9, 1970, abandoned. This application Jan. 31, 1977, Ser. No. 763,890

Int. Cl.² B22D *23/08*

U.S. Cl. 264—8 **26 Claims**



1. The method of forming fibers from a flowable thermoplastic fiber forming material comprising the steps of:

(a) feeding the flowable fiber forming material onto the outer surface of at least one spinning element which tapers inwardly to a terminal point in one axial direction,

(b) establishing the flow of the fiber forming material along and substantially encasing the outer surface of the spinning element,

(c) sweeping the fiber forming material with a flow of a heated fluid adjacent to and along the surface of the tapered spinning element toward its terminal point,

(d) spinning the fiber forming material from the terminal point of the spinning element into uncongealed fibers under the continued influence of the sweeping fluid,

(e) attenuating the uncongealed fibers under the continued influence of the sweeping fluid, and

(f) cooling the uncongealed fibers to stabilize and form a uniform suspension in the sweeping fluid, and

(g) collecting the congealed fibers.

4,211,737

PROCESS FOR PRODUCING SYNTHETIC FIBERS FOR USE IN PAPER-MAKING

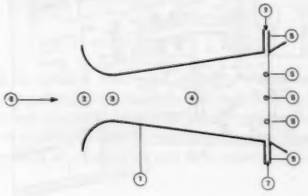
Giovanni Di Drusco, Milan, and Deoscaride Zaffagnini, S. Biagio, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 754,639, Dec. 27, 1976, abandoned, which is a continuation of Ser. No. 633,116, Nov. 18, 1975, abandoned. This application Oct. 31, 1977, Ser. No. 847,172

Claims priority, application Italy, Nov. 19, 1974, 29594 A/74

Int. Cl.² B22D *23/08*

U.S. Cl. 264—12 **7 Claims**



1. Process for preparing fibrils or microfibers of synthetic polymers, suitable for use in the manufacture of paper, in which solutions, emulsions or dispersions of fiber-forming thermoplastic polymers in a liquid medium are extruded through a nozzle under conditions such that instantaneous vaporization of the liquid medium occurs in the ambient of extrusion, and are caused to be impacted, in said ambient of extrusion, by a highspeed gaseous fluid jet having an angular direction with respect to the extrusion direction of such solution, emulsion or dispersion, characterized in that said fluid is initially made to expand through a convergent-divergent nozzle of the DeLaval type, and in that the polymeric solution, emulsion or dispersion is extruded into the divergent portion of such convergent-divergent nozzle.

4,211,738

LIGHTWEIGHT AGGREGATE

Gerhard Genis, P.O. Box 12178, Benoryn, South Africa (1504)

Filed Jul. 25, 1977, Ser. No. 818,547

Int. Cl.² B01J *2/12*

U.S. Cl. 264—44 **6 Claims**

1. A method of making a lightweight aggregate for preparing lightweight concrete comprising the steps of:

(a) providing a bed of a ground, powdered sand and cement

(b) coating nucleus particles selected from the group consisting of expanded plastics material, combustible vegetable material and coal having a diameter between about ¼" to

about 1 3/16" with an adhering agent selected from the group consisting of molasses, aqueous starch suspension, and water;

(c) introducing said coated nucleus particles into said bed of powdered sand and cement and rolling said nucleus particles in said bed to cause accretion of said sand and cement mixture upon said nucleus particles to form a layer on said wetted particles.

(d) removing said coated particles from said ground mixture and;

(e) allowing said coated particles to dry causing said cement to cure to form said lightweight aggregate.

4,211,739

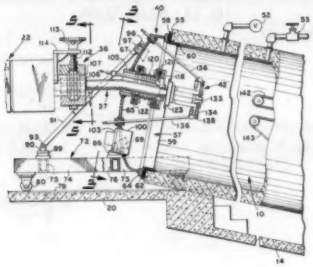
FOAM EXTRUSION APPARATUS AND METHOD

Arthur L. Phipps, Los Osos, Calif., assignor to Condec Corporation, Old Greenwich, Conn.

Filed Jul. 10, 1978, Ser. No. 922,542

Int. Cl.[2] B29D *27/00*; B29F *3/02*

U.S. Cl. 264—51 **53 Claims**



1. In a method of extruding a foamable material into a vacuum chamber comprising the steps of mounting an extruder, a die, and a closure for such chamber therebetween for movement toward and away from such chamber, moving said extruder, die and closure as a unit or separately toward such chamber to close the same, creating a vacuum in such chamber, and extruding such foamable material through the die into the chamber for expansion therein.

4,211,740

FUEL PELLETS AND PROCESS FOR PRODUCING FUEL PELLETS FROM BOTANICAL MATERIALS

John J. Dean, 1888 Scot Rd., and Lloyd M. Wetzig, 465 N. 22nd St., both of Springfield, Oreg. 97477

Continuation of Ser. No. 590,511, Jun. 26, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,990

Int. Cl.[2] B29C *19/02*

U.S. Cl. 264—68 **1 Claim**

1. A process for producing pelletized fuel from aboreal material having a moisture content in its preprocessed form substantially in excess of 12 percent, said material being selected from the group consisting of tree bark and wood fibers, including the steps of:

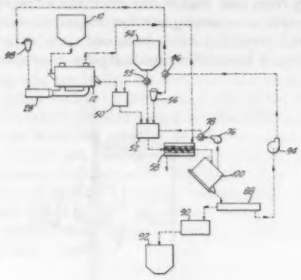
(a) drying the material to be processed to a moisture content of approximately 12 percent;

(b) grinding the dried material to a size sufficiently small to pass through a screen having openings no greater than 0.95 cm.;

(c) pre-heating the dried and ground material to within the range of 93° C. to 121° C. but limiting the preheating and drying so as to preclude the material from reaching the flash point in the subsequent compaction and extrusion of the material;

(d) continuously passing the dried, ground and preheated material through an extrusion die of a pelletizing mill having passageways whose diameter is approximately 0.635 cm.;

(e) rotating said mill to cause compaction and extrusion of the material into and through the extrusion dies and thereby creating sufficient compression and friction to generate heat sufficient to heat the in situ resin and thermoplastics throughout the mass of extruded material to a plasticized state;



(f) cooling the extruded material so that it will be relatively rigid; and

(g) breaking the extruded and cooled material into random lengths to form pellets.

4,211,741

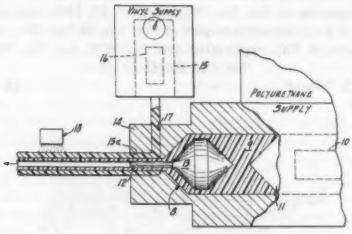
EXTRUSION PROCESS FOR LAMINATED MEDICAL-SURGICAL TUBING

Eli Ostoich, Greenfield, Wis., assignor to Sunlite Plastics, Inc., Milwaukee, Wis.

Division of Ser. No. 785,440, Apr. 7, 1977, abandoned. This application Feb. 8, 1978, Ser. No. 875,929

Int. Cl.[2] B29F *3/10*

U.S. Cl. 264—173 **5 Claims**



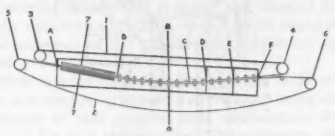
1. The method of forming a non-migratory medical-surgical tubing including a first tube of a first thermoplastic intimately secured onto a second tube of a second thermoplastic, said first and second thermoplastics having distinctly different curing temperatures and the lower temperature cured thermoplastic being adversely effected by the temperature of the higher temperature cured thermoplastic, comprising separately heating said first and second thermoplastics to the corresponding curing temperatures, simultaneously extruding the heated first and second thermoplastics at essentially said temperatures in an extruding apparatus, and cooling the extruded laminated tubing as it emerges from the extruding apparatus for said extruding.

4,211,742

PROCESS FOR THE CONTINUOUS CASTING OF LIQUID POLYMERIZABLE COMPOSITIONS

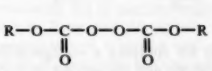
Yasuyuki Kato, and Masahiko Moritani, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 28, 1977, Ser. No. 865,180
Int. Cl.[2] B29D 7/02
U.S. Cl. 264—216 12 Claims



1. A process for the continuous casting of liquid polymerizable compositions, which comprises:

continuously feeding a liquid polymerizable composition, which is prepared by dissolving a polymerization initiator of the formula:



wherein R is an alkyl or alkoxyalkyl group having 4 to 10 carbon atoms, in a syrup of methyl methacrylate having a polymer content of 15 to 35% by weight, into a space enclosed with a pair of upper and lower moving endless belts and continuous gaskets between the belts, both of said belts travelling in the same direction at the same speed and said gaskets being arranged at each side of the belt in opposed relationship and travelling in intimate contact with said belts,

driving or running the belts through a hot-water polymerization zone, during which the liquid polymerizable composition becomes polymerized, wherein both the amount of the initiator, expressed in parts by mole based on 100 parts by weight of the syrup, and the temperature in °C. of the zone are present within the region enclosed with the straight lines passing successively through the five points in FIG. 1, said points being I (2×10^{-5}, 90), II (1.5×10^{-3}, 90), III (1.5×10^{-3}, 60), IV (1.8×10^{-4}, 60) and V (2×10^{-5}, 85),

driving or running the belts through a heat treatment zone, during which the polymerization is completed,

and then removing the resulting plate-like polymer article at the other end of the moving belts.

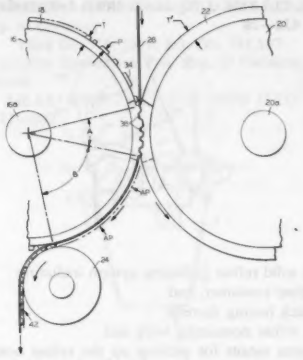
4,211,743

APPARATUS AND METHOD FOR EMBOSSING WEB MATERIAL

Jan P. Nauta, New Britain, and Jacob J. Kos, Plainville, both of Conn., assignors to Nauta Roll Corporation, Kensington, Conn.

Filed May 24, 1978, Ser. No. 909,013
Int. Cl.[2] B29C 17/00
U.S. Cl. 264—284 16 Claims

1. In an apparatus for embossing a thermoplastic web material and including a first embossing member having a resilient embossing surface providing a primary embossing pattern of a first depth; a second embossing member having a resilient surface providing a secondary embossing pattern of a lesser depth than said first depth of said primary embossing pattern; means mounting said first and second embossing members for relative movement to define a roll nip therebetween; means to pass a heated thermoplastic web material through said nip to form an embossed pattern thereon, the improvement wherein said resilient surface of said first embossing member has a hardness of about 50 to 85 durometer on the Shore A scale and is at least about 5 durometer on the Shore A scale harder than said resilient surface of said second embossing member, the resilient surface of said second member having a hardness of about 45 to 80 durometer on the Shore A scale and said roll nip exerting sufficient pressure to temporarily deform both said resilient surfaces thereat, the associated web material being pressed in said nip between said resilient surfaces into surface-conforming contact with said first embossing member and



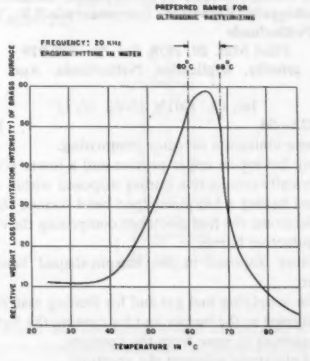
remaining in contact with said primary embossing pattern thereof upon passage from said nip; and means for stripping the associated web material from said primary embossing pattern of said first embossing member at a point spaced from said nip in the direction of rotation of said first embossing member.

4,211,744

PROCESS FOR ULTRASONIC PASTEURIZATION

Raymond M. G. Boucher, New York, N.Y., assignor to Biophysics Research & Consulting Corporation, New York, N.Y.

Filed May 24, 1978, Ser. No. 908,964
Int. Cl.[2] A61L 1/00
U.S. Cl. 422—20 10 Claims



1. A method for pasteurizing, decontaminating, or disinfecting medical, dental, and surgical instruments or other objects in liquid phase without the use of chemosterilants consisting essentially of placing said objects in a hot aqueous solution at a temperature of from 58° to 68° C. for a time of from about 15 to 20 minutes while creating at the same time an ultrasonic field having an acoustic energy density from about 5 to about 55

watts per liter and an ultrasonic frequency below about 150 kHz in said aqueous non-chemosterilant solution.

4,211,745

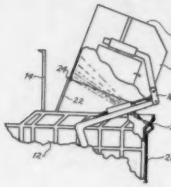
REFUSE CONTAINER SPRAYER

Leroy Boyd, 1932 Texas Ave., Lubbock, Tex. 79405

Filed Jun. 24, 1976, Ser. No. 699,534

Int. Cl.[2] **A61L** *3/02, 11/00;* **B08B** *3/00;* **B65F** *3/02*

U.S. Cl. 422—28 **2 Claims**



1. In a solid refuse gathering system including
a. a refuse container, and
b. a truck having thereon
(i) a refuse containing body and
(ii) arm means for picking up the refuse container and inverting it over the body, thus dumping the contents of the container into the body,
c. said container having a hinged lid thereon;
d. the improved method of spraying the container comprising the steps of:
e. spraying the interior of the container while it is inverted over the truck after the contents of the container have been dumped,
f. timing the spraying operation to coincide with a period of time when the lid of the container is open because of the inverted position of the container,
g. the spray contains a rust preventive lubricant for the hinge on the lid of the container.

4,211,746

FLAME IONIZATION DETECTOR

Rudolf A. Mees, Nieuwkoop, Netherlands, assignor to WTI Wetenschappelijk Technische Instrumentatie B.V., 's-Gravenzande, Netherlands

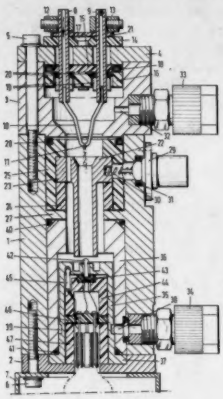
Filed Mar. 28, 1978, Ser. No. 890,929

Claims priority, application Netherlands, Apr. 1, 1977, 7703583

Int. Cl.[2] **G01N** *27/62, 31/12*

U.S. Cl. 422—54 **10 Claims**

1. A flame ionization detector comprising:
a housing having an upper portion and a lower portion;
an electrically-conductive burner disposed within the housing and having a hairpin-shaped bend formed therein;
a first electrode, the first electrode comprising the electrically-conductive burner;
an aperture disposed in the hairpin-shaped bend of the burner;
means for supplying fuel gas and for feeding materials to be investigated to the burner and for causing the fuel gas and the materials to issue from the aperture;
a second electrode adjacent the aperture;
a lead electrically connected to the second electrode and passing in an electrically-insulated manner through a wall of the housing to provide access external to the housing of a signal collected at the second electrode;
an air supply conduit to supply air to the burner;
a discharge conduit coupled to the housing for discharging air and waste products therefrom;
means adapted for providing a flow of current through the burner to cause the burner to incandesce and to ignite the fuel gas to provide a flame on the burner; and



means adapted for applying a voltage differential between the first electrode and the second electrode.

4,211,747

SYSTEM FOR MEASURING RADIOACTIVITY OF LABELLED BIOPOLYMERS

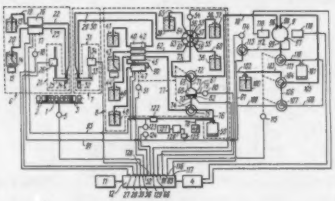
Valery N. Gross, ulitsa Poddubnogo, 6, Alma-Ata, U.S.S.R.

Filed Aug. 22, 1977, Ser. No. 826,664

Claims priority, application U.S.S.R., Aug. 23, 1976, 2398268; Sep. 1, 1976, 2419312

Int. Cl.[2] **G01N** *33/16, 1/14*

U.S. Cl. 422—81 **16 Claims**



1. A system for measuring radioactivity of labelled biopolymers, comprising:
a set of containers adapted for receiving aqueous solutions of biological samples containing biopolymers which are subsequently precipitated in said containers on particles of diatomite in the presence of a coprecipitator, then filtered, dissolved, and mixed with a scintillator;
radioactivity measuring means including a detection chamber to which is fed the mixture produced in said set of containers;
an electric drive for moving said set of containers in a stepwise manner;
means for proportioned feeding of said coprecipitator and a suspension of diatomite in an acid solution to said containers which contain the biological sample for forming an acid precipitation of bipolymers;
means for the removal of precipitated samples from said containers;
precipitated biopolymer filtering means for successively filtering the precipitate, suspending the precipitate, dissolving the biopolymers mixed with said scintillator for feeding of the mixture to said detection chamber;
a system of pipelines interconnecting said above-recited

means; and said means for measuring radioactivity of labelled biopolymers including,

a measuring cell arranged in a detection chamber and communicating with said means for filtering precipitated biopolymers through one pipeline of said system of pipelines; a program unit electrically connected to said electric drive, said means for acid precipitation of biopolymers, said means for the removal of precipitated samples from said containers, said filtering means, and said radioactivity measuring device; said program unit adapted to periodically switch on and off the above-recited means and check the sequence of the radioactivity measuring operations; and

a control unit for controlling the initiation of the system and for selecting programs, said control unit being electrically coupled to said program unit, said electric drive, said means for acid precipitation of biopolymers, said means for the removal of precipitated samples from said containers, said means for filtering precipitated biopolymers, and said radioactivity measuring device whereby said means for forming an acid precipitation of biopolymers is activated by initiation of said program unit so that said coprecipitator and suspension of dialomite in an acid solution are proportionately fed to said biological sample containing container to form said precipitate samples at which time said program unit activates said electric drive for moving said set of containers in a stepwise manner, whereupon said precipitate samples are removed from said containers by said removal means and transferred through said pipeline system to said precipitated biopolymer filtering means whereupon the precipitate is filtered, suspended, dissolved in a solvent, and mixed with said scintillator, whereupon the biopolymer containing suspension is conducted to said measuring cell whereupon the radioactivity thereof is measured.

4,211,748

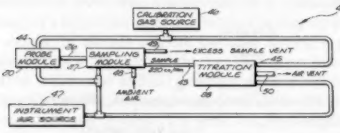
STACK GAS ANALYZER AND THERMAL OXIDATION DEVICE THEREFOR

Arthur L. Vincent, Monrovia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 23, 1978, Ser. No. 871,195

Int. Cl.[2] **G01N** *31/16, 31/06*

U.S. Cl. 422—90 **4 Claims**



1. A stack gas analyzer for connection from a recovery stack, said stack gas analyzer comprising: first means including a first outlet for producing a flow of a dehydrated mixture of the gases flowing in said recovery stack, said dehydrated mixture including sulfur dioxide, total reduced sulfur (TRS), and oxygen remaining after combustion utilizing an oxygen rate a few percent in excess of the stoichiometric rate; a scrubber having an inlet and an outlet, said scrubber inlet being connected from said first outlet to receive said dehydrated mixture, said scrubber having a composition to remove sulfur dioxide from said dehydrated mixture without removing the said TRS, said scrubber outlet having a flow therethrough of a TRS sample mixture the same as said dehydrated mixture except for the removal of sulfur dioxide therefrom and including at least some of said oxygen; a coulometric titrator having a cell including an inlet and an outlet, and having second means to produce an electrical output signal proportional to the concentration of sulfur dioxide in an oxidized gas mixture passing through said cell from said cell inlet to said cell outlet; a conduit connected from said scrubber outlet to said cell inlet, said conduit having a flow of said TRS sample therein; and third means to heat said TRS sample in said conduit to a predetermined temperature such that said TRS is oxidized to sulfur dioxide.

4,211,749

LIQUID CONTAINER FOR URINE COLLECTION

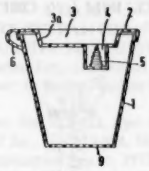
Hans-Joachim Kantner, Fichtwenweg 5, D-6072 Dreieichenhain, Fed. Rep. of Germany

Filed Dec. 16, 1976, Ser. No. 751,157

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2556636

Int. Cl.[2] **G01N** *33/16, 1/10;* **E03D** *13/00*

U.S. Cl. 422—102 **34 Claims**



1. A stackable beaker for laboratory purposes, particularly a urine container, having a cover which is provided in the vicinity of its edge with a spout, said cover on its outward side, from which said spout is projecting, having a surface corresponding generally in size and shape to the beaker jacket edge area near the beaker base to facilitate nesting and stacking of one beaker on top of another beaker when the beakers are closed by the covers thereof, the spout in the stacking position being contained in a chamber provided on said cover or said beaker base, and means being provided for releasably fixing the angular association of beakers stacked or stored, respectively, over each other.

4,211,750

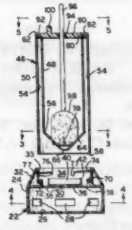
BRUSH AND DEODORANT HOLDER

Dorie Gillespie, 507 E. Taber, Fort Wayne, Ind. 46803

Filed Feb. 1, 1979, Ser. No. 8,593

Int. Cl.[2] **A61L** *3/00, 9/04*

U.S. Cl. 422—123 **6 Claims**



1. A brush and deodorant holder comprising a base, a wall defining an elongated chamber for receiving the brush, said chamber having a lower end removably supported by said base in upwardly extending relation therefrom, said base having a cavity therein for receiving an air freshner substance; the lower end of said chamber having an opening therein providing communication between said cavity and said chamber; passage means on said wall for providing a contained vapor flow exteriorly of said chamber from said cavity to the upper portion of said wall; and a cap removably supported on said wall at the upper end of said chamber and having an opening

therein for receiving and supporting a brush handle, said cap having vent openings in communication with said passage means; said base having vent openings in communication with said cavity whereby a flow path is provided for ambient air through said base vent openings to said cavity, through said passage means, and outwardly through said cap vent openings.

4,211,751
USE OF AN APPARATUS FOR CONTINUOUS PHOTOPOLYMERIZATION

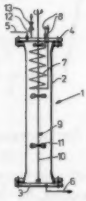
Berthold Keggenhoff; Eberhard Bandtel, and Hans J. Rosenkranz, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,826

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709606

Int. Cl.[2] B01J *1/10;* **C08F** *2/48*

U.S. Cl. 422—134 **5 Claims**



1. An apparatus for the continuous photopolymerisation of ethylenically unsaturated monomeric liquids, comprising at least one reactor, each reactor comprising an elongated vertically disposed glass cylinder having an inlet and an outlet at opposite ends thereof forming a straight liquid path therebetween, a heat exchanger located within the cylinder, along the straight liquid path, means for feeding liquid into the reactor under pressure, irradiating means disposed around the exterior of the cylinder adapted to irradiate the interior of the cylinder with light all along the straight liquid path from the inlet to the outlet to initiate photopolymerisation of material within the cylinder and stirring means disposed within the cylinder along the straight liquid path to continuously bring different molecules of the liquid into contact with the light during the travel thereof along the liquid path.

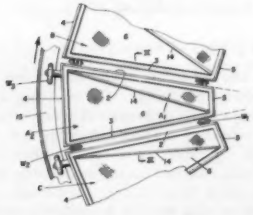
4,211,752
HINGED LOAD DUMPING DOOR FOR MULTI-CELL EXTRACTORS

Arthur F. Saxon, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Jun. 16, 1978, Ser. No. 916,205

Int. Cl.[2] B01D *11/00*

U.S. Cl. 422—268 **6 Claims**



5. A bottom door for use with a multi-cell continuous rotary extractor where a continuous succession of cells which are wider at one end than the other, being of trapezoidal shape, with a door at the bottom of each cell of substantially corresponding size and shape is hinged along one edge with respect to the following cell of the series whereby it may swing in a vertical arc to open and close the door, and there is a concentric track alongside the wider ends of the cells of the series and there is a roller on the wider end of the door positioned to roll on and be supported by said track when there is relative movement between the cells and the track, the track having a gap to allow each door to swing downwardly to dump the contents of the cell when its roller loses the support of the track as its encounters the gap, the invention wherein: the door has a rigid peripheral frame of trapezoidal shape having hinge points adjacent each end of one side thereof cooperating with fixed hinge points along the corresponding edge of the cell, the door frame supporting the edges of a bottom panel forming the bottom closure of the cell against which the frame is fitted, said frame characterized by a rigid structural member secured to the underside of the frame and extending diagonally of the frame from that corner of the narrower end of the frame where it joins the hinged side of the frame to the opposite corner in such position as to constitute the common hypotenuse of two opposed complementary triangles of unequal areas, the larger of which is bounded other than by the hypotenuse by the length of the hinged side frame member and the longer of the end frame members.

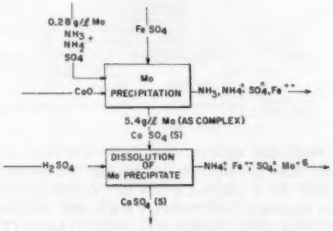
4,211,753
RECOVERY OF MOLYBDENUM VALUES FROM DILUTE SOLUTIONS

J. Paul Pemsler, Lexington, and John K. Litchfield, Bedford, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,158

Int. Cl.[2] C01G *39/00*

U.S. Cl. 423—54 **12 Claims**



1. A process for concentrating the molybdenum values in an aqueous ammoniacal leach liquor, said process comprising the steps of:

A. adding ferrous ions to the liquor in sufficient quantities to saturate the leach liquor and provide an excess sufficient to precipitate a solid complex whose approximate Fe/Mo ratio is 3.5 or greater and precipitating the molybdenum values therein as a ferrous hydroxide ammonium molybdate complex;

B. separating the molybdenum containing precipitate from the aqueous liquor; and

C. adding acid to the separated molybdenum containing precipitate to resolubilize the molybdenum values.

4,211,754

PROCESS FOR THE PRODUCTION OF A TANTALUM AND NIOBIUM BEARING CONCENTRATE FROM A TANTALUM AND NIOBIUM BEARING FERRO-ALLOY

Michel C. F. Van Hecke, Aartselaar, and Jean Deweck, Brussels, both of Belgium, assignors to Metallurgie Hoboken-Overpelt, Brussels, Belgium

Filed Oct. 13, 1978, Ser. No. 951,113

Claims priority, application Luxembourg, Oct. 19, 1977, 78341

Int. Cl.[2] C01G *33/00, 35/00*

U.S. Cl. 423—62 9 Claims

1. In a process for the production of a tantalum and niobium bearing concentrate from a tantalum and niobium bearing ferro-alloy containing tantalum and niobium as carbide, by treating the ferro-alloy in molten state with a controlled amount of an oxidizing agent in order to slag at least most of the tantalum and at least part of the niobium and by separating the so obtained slag phase from the metal phase, the improvement which comprises using air, oxygen enriched air or oxygen as oxidizing agent and adjusting the iron content of the ferro-alloy by adding at least 70% by weight of iron prior to the step of forming the slag so that at least most of the tantalum carbide is dissolved in the molten ferro-alloy.

4,211,755

PROCESS FOR BENEFICIATING TITANIFEROUS ORES

Wendell E. Dunn, Jr., 68 Arthur St., Sidney, Australia

Continuation-in-part of Ser. No. 351,554, Apr. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 138,467, Apr. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 4,563, Jan. 21, 1970, abandoned. This application Mar. 3, 1975, Ser. No. 554,456

Int. Cl.[2] C01G *23/04*

U.S. Cl. 423—74 1 Claim

1. A process for beneficiating titaniferous ores into a substantially pure titanium dioxide product comprising:

(a) continuously subjecting, in a gas-solids reactor with chlorine under fluidizing conditions and at a temperature of 900°–1100° C., a reactor bed mixture of 10–30%, by weight, of carbon and a particulate titaniferous ore wherein said particulate titaniferous ore is a mixture comprising (i) a larger particle size fraction having up to 90%, by weight, of titaniferous ore particles having a gangue content of up to 5%, by weight, and having particle size of −60 to +120 mesh and (ii) a smaller particle size fraction having up to 90%, by weight, of titaniferous ore particles having a gangue content of at least 7%, by weight, and a particle size of −120 to +200 mesh, wherein the amount of titanium values in said smaller sized fraction is equal to or less than the amount of titanium required to replace the iron values in said larger size fraction;

(b) continuously withdrawing a portion of the reactor bed and separating said withdrawn portion into the substantially pure titanium dioxide product containing 3 to 4%, by weight, of gangue and a partially beneficiated titaniferous ore product, recycling to the reactor said partially beneficiated titaniferous ore product mixed with sufficient fresh reactor bed mixture to maintain a constant reactor bed depth whereby the smaller particle size fraction is converted within the reactor bed to form vaporized iron chloride and titanium tetrachloride and freeing gangue associated with said smaller particle size fraction and said titanium tetrachloride reacts with the larger particle size ore thereby replacing iron values in said larger particle size titaniferous ore with titanium values and forming thereby vaporized iron chloride; and

(c) withdrawing freed gangue and vaporized iron chloride.

4,211,756

SYNTHESIS OF ZEOLITE S

George C. Johnson, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,068

Int. Cl.[2] C01B *33/28*

U.S. Cl. 423—118 4 Claims

1. A process for preparing crystalline aluminosilicate zeolite S comprising reacting in a suitable Pyrex flask an aqueous solution of sodium carbonate and sodium bicarbonate with glass having from about 81% SiO_2, about 1 to 4% alumina, about 13% B_2O_3 and about 4% Na_2O wherein the temperature is controlled at from about 80 to about 120° C. and the time required for synthesis varied from 24 to 168 hours and wherein the glass is supplied solely from said flask.

4,211,757

ACTINIDE SULFITE TETRAHYDRATE AND ACTINIDE OXYSULFITE TETRAHYDRATE

George W. Watt, Austin, Tex., and Daniel W. Baugh, Jr., Baton Rouge, La., assignors to Exxon Nuclear Company, Inc., Bellevue, Wash.

Continuation of Ser. No. 673,733, Apr. 5, 1976, abandoned, which is a division of Ser. No. 579,494, May 21, 1975, Pat. No. 4,012,489. This application Sep. 6, 1977, Ser. No. 830,751

Int. Cl.[2] C01G *56/00, 43/00*

U.S. Cl. 423—251 4 Claims

1. A compound comprising an actinide sulfite tetrahydrate selected from the group consisting of uranium (IV) sulfite tetrahydrate and plutonium (IV) sulfite tetrahydrate.

3. A compound comprising an actinide oxysulfite tetrahydrate selected from the group consisting of uranium (IV) oxysulfite tetrahydrate and plutonium (IV) oxysulfite tetrahydrate.

4,211,758

CERAMIC COMPOSITIONS AND ARTICLES PREPARED THEREFROM

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 26, 1978, Ser. No. 973,332

Int. Cl.[2] C04B *35/50, 35/44*

U.S. Cl. 423—263 11 Claims

1. An article of manufacture comprising a high density polycrystalline body substantially transparent to visible light, said body consisting essentially of a compound having a perovskite structure and the formula:

$$ABO_3$$

wherein A is selected from the group consisting of lanthanum, cerium, praseodymium, neodymium and mixture thereof and B is selected from the group consisting of aluminum, scandium, lutecium and mixture thereof.

4,211,759

HIGH-DENSITY SODIUM PERBORATE AND METHOD OF PREPARATION

Paul Mollard, Sainte-Foy-les-Lyon, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 852,750, Nov. 18, 1977, abandoned, which is a continuation of Ser. No. 678,205, Apr. 19, 1976, abandoned, which is a continuation of Ser. No. 468,878, May 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 217,039, Jan. 11, 1972, abandoned. This application Mar. 12, 1979, Ser. No. 19,614

Claims priority, application France, Jan. 13, 1971, 71.00900

Int. Cl.[2] C01B *15/12*

U.S. Cl. 423—281 18 Claims

1. The method for preparing granules of sodium perborate $NaBO_2.H_2O_2.3H_2O$ characterized by approximately spherical shape having apparent density between about 0.74 and 0.83 Kg/liter, having an average granule size between about 380

and 440 microns and having superior resistance to abrasion and impact, wherein in the absence of stabilizers like alkaline metal silicates, the method comprises seeding an aqueous solution free from residual surfactants with sodium perborate, introducing into said aqueous solution (a) hydrogen peroxide, (b) sodium metaborate, and (c) a surface active anionic composition containing at least one sulfate and/or sulfonate group bonded to at least one hydrocarbon chain having 2 to 22 carbon atoms and of a sufficient hydrophobicity to impart surfactant properties to the composition and to cause the crystallization of the sodium perborate, and separating said granules from the aqueous solution to produce the granules of sodium perborate and the mother liquor.

16. A method of preparing granules of sodium perborate, $NaBO_2.H_2O_2.3H_2O$, characterized by approximately spherical shape, an apparent density between about 0.74 and 0.83 Kg/liter, an average granule size between about 380 and 440 microns and a superior resistance to abrasion and impact, which method comprises

(a) preparing a supersaturated aqueous solution of sodium perborate $NaBO_2.H_2O_2.3H_2O$ without the presence of surfactants;

(b) then adding to said supersaturated solution, an effective amount of a surface active anionic composition containing at least one sulfate and/or sulfonate group bonded to at least one hydrocarbon chain having 2 to 22 carbon atoms and sufficient hydrophobicity to impart surfactant properties thereto and causing crystallization of the sodium perborate granules in the presence of the anionic surfactant in the absence of stabilizers like alkaline metal silicates, and separating the granules from the water to recover the granules and mother liquor.

4,211,760
CRYSTALLINE ZEOLITE UPSILON AND PROCESS FOR PREPARING SAME

Robert W. Grose, Mahopac, and Edith M. Flanigen, White Plains, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 432,137, Jan. 10, 1974, abandoned. This application Mar. 6, 1979, Ser. No. 18,074

Int. Cl.[2] **C01B** *33/28*

U.S. Cl. 423—328 **4 Claims**

1. A synthetic crystalline zeolitic molecular sieve having a composition expressed in terms of mole ratios of oxides as follows:

$$0.9\pm0.1M_{2/n}O:Al_2O_3:2.4\text{–}3.4SiO_2:0\text{–}4.5H_2O,$$

wherein "M" is at least one or a mixture of two or more of hydrogen, ammonium or metal cations having a valence of "n," said zeolitic molecular sieve in its sodium cation form having an X-ray powder diffraction pattern containing at least those d-spacings set forth in Table B.

4,211,761
PROCESS FOR REMOVAL OF SULFUR DIOXIDE FROM GASEOUS MIXTURES

Shao E. Tung, 91 Blake Rd., Brookline, Mass. 02146

Continuation-in-part of Ser. No. 728,174, Sep. 30, 1976, Pat. No. 4,101,643, which is a continuation-in-part of Ser. No. 499,582, Aug. 22, 1974, Pat. No. 3,984,529. This application Oct. 3, 1977, Ser. No. 838,913

The portion of the term of this patent subsequent to Oct. 5, 1993, has been disclaimed.

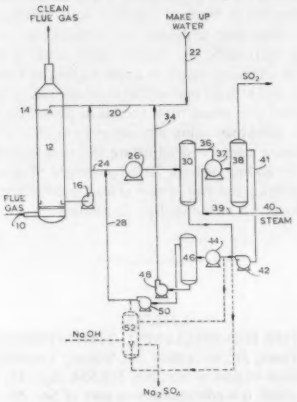
Int. Cl.[2] **C01B** *17/48, 17/00*

U.S. Cl. 423—539 **6 Claims**

1. A process for removing sulfur dioxide from a gaseous mixture comprising:

contacting the gaseous mixture in a scrubbing zone with a removal reactant consisting essentially of an aqueous solution of a first salt of an alkali metal to form an aqueous solution of an alkali metal hydrosulfite salt, said first salt being derived from a weak acid having a pKa value which is at least 3.5;

contacting, in a transfer reaction zone, the aqueous solution of said alkali metal hydrosulfite salt with a transfer reactant consisting of an organic phase which does not form a stable emulsion with water, and includes at least one aliphatic amine salt containing from about 8 to about 45 carbon atoms, and having a solubility in water of less than about 5 gms of the amine salt per 100 gms of water at 25° C., and having a transfer capability, G, which is greater than 0.15, said amine salt being derived from the reaction of an amine with a weak acid having a pKa value which is



at least 3.5, to yield an organic liquid phase containing, by a transfer reaction, at least one sulfur-containing amine salt, and an aqueous solution phase containing a second alkali metal salt differing from said first alkali metal salt and reactable with free amine derived from said sulfur-containing amine salt to yield said first alkali metal salt;

heating the organic liquid phase to decompose the sulfur-containing amine salt to yield sulfur dioxide and a free amine; then

contacting at least a portion of said free amine with at least a portion of said second alkali metal salt to reconstitute said amine salt and concurrently reconstitute said first alkali metal salt.

4,211,762
SPECIFIC BINDING ASSAY TECHNIQUES

Keith G. Huggins, 44 Berkley Rd., Hillingdon, Middlesex, and Ivan M. Roitt, 995 Finchley Rd., London, both of England

Filed Jan. 26, 1978, Ser. No. 872,668

Int. Cl.[2] **G01N** *33/16;* **A61K** *43/00*

U.S. Cl. 424—1 **24 Claims**

1. A method of standardizing a labelled constituent, which is a conjugate of a first labelling substance and a binding component and which is capable of reacting with a ligand, against a ligand reference substance for use in a specific binding assay method which comprises the steps of:

(a) incubating substrates having anti-light chain antibodies bound thereto with varying concentrations of a ligand which is labelled with a second labelling substance, wherein both the amount of ligand protein present in the labelleo ligand, represented by the second labelling substance, and the amount of ligand reference substance equivalent to the labelled ligand protein, in terms of the amount of labelled ligand present, are known, for a time sufficient to form a series of products which are substrates having anti-light chain-antibodies attached thereto, and varying amounts of labelled ligand attached to the anti-light chain antibodies;

(b) incubating the products of step (a) with the labelled constituent whereby the labelled consitituent is bound to the labelled ligand;
(c) measuring the products of step (b), and determining the amount of the labelled ligand and the labelled constituent;
(d) determining the ligand protein present in the products of step (b), based on the amount of labelled ligand present, by means of the relationship known from (a); and
(e) determining in the products of step (b) the amount of ligand protein present, expressed in terms of the ligand reference substance, whereby the labelled constituent is standardized in terms of the ligand bound thereto, for use in a specific binding assay technique.

4,211,763

ANION EXCHANGE RESIN IN THE DETERMINATION OF THYROID FUNCTION

David L. Marshall, Carmel, and William C. Herndon, Indianapolis, both of Ind., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 822,457, Aug. 8, 1977, abandoned. This application Feb. 8, 1978, Ser. No. 876,074
Int. Cl.[2] G01N *33/16;* A61K *43/00*
U.S. Cl. 424—1 **3 Claims**

1. In a method for measuring the binding capacity of the proteins in a body fluid for triiodothyronine wherein a known quantity of radioactive labeled triiodothyronine is mixed with a sample of the body fluid so as to bind to the thyroid hormone-binding-proteins in the fluid sample, separating the bound and unbound radioactive triiodothyronine in different fractions by adding a secondary binding agent, and measuring the amount of radioactivity present in either or both fractions, the improvement comprising using a tabletted secondary binding agent that contains a powdered compressible strong base anion exchange resin having pyridinium active ion exchange groups, said resin having a dry mesh size of from about 50 to 400 and being capable of binding at least 90% of the unbound triiodothyronine within three minutes following the disintegration of the tablet.

4,211,764

GASTRIC SECRETION STIMULATION WITH 2-AMINO-5-(2-AMINOETHYL)-1,3,4-THIADIOZOLE

Leonid L. Grechishkin; Ljudmila K. Gavrovskaya, and Vadim L. Goldfarb, all of Leningrad, U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Experimentalnoi Meditsiny, U.S.S.R.

Filed Mar. 13, 1978, Ser. No. 885,367
Int. Cl.[2] A61K *29/00, 31/41, 31/415*
U.S. Cl. 424—9 **8 Claims**

1. Gastric secretion stimulator composition, comprising a gastric secretion stimulating effective amount of a salt of 2-amino-5-(2-amino-ethyl)-1,3,4thiadiazole of a pharmaceutically acceptible acid, and a pharmaceutical carrier therefor.

6. Method for stimulating gastric secretion, which comprises administering to a patient requiring the same a gastric secretion stimulating effective amount of a salt of 2-amino-5-(2-amino-ethyl)-1,3,4-thiadiazole of a pharmaceutically acceptible acid.

4,211,765

METHOD FOR CONTROLLING OBESITY

John H. Johnson, Kirkwood, and Joseph E. Fields, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 572,799, Apr. 29, 1975, Pat. No. 4,117,111, which is a division of Ser. No. 353,832, Apr. 23, 1973, Pat. No. 3,923,972, which is a continuation-in-part of Ser. No. 188,577, Oct. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 789,081, Jan. 2, 1969, abandoned. This application Sep. 25, 1978, Ser. No. 945,720
Int. Cl.[2] A61K *31/74*
U.S. Cl. 424—78 **4 Claims**

1. A method of countering a tendency toward obesity in a subject in need thereof which comprises orally administering to such subject an effective amount of non-absorbable polymerized unsaturated carboxylic acid or pharmaceutically acceptable derivative thereof sufficient to cause increased fat excretion, the polymer being a cationic derivative of an olefin-maleic acid copolymer of molecular weight of about 3000 to about 1,000,000 which is an effective pancreatic lipase inhibitor.

4,211,766

CANCER ASSOCIATED POLYPEPTIDE ANTIGEN COMPOSITIONS

Knut B. Björklund, Bromma, Sweden, assignor to AB Bonnierföretagen, Sweden

Division of Ser. No. 664,258, Mar. 5, 1976, Pat. No. 4,160,018, which is a division of Ser. No. 373,004, Jun. 25, 1973, Pat. No. 3,960,827, which is a continuation-in-part of Ser. No. 270,273, Jul. 10, 1972, abandoned. This application Mar. 30, 1979, Ser. No. 25,351
Int. Cl.[2] A61K *37/00, 39/00;* C07G *7/00;* G01N *31/00*
U.S. Cl. 424—88 **3 Claims**

1. An antigenic composition, comprising an antigenic amount of an active ingredient CAPA, said CAPA being defined as follows:

a cancer associated polypeptide antigen, obtained from a source selected from the group consisting of human tumor tissue, a culture of cancerous cells grown in vitro, and human placental tissue, having a molecular weight of 23,200±2,500 (S.D.) and showing a spectrophotometric peak absorption at a wave length within the range from about 229 nm to about 233 nm, said polypeptide being based on a single peptide chain as shown by treatment with performic acid, said single peptide chain comprising the following amino acids: Alanine, Arginine, Aspartic acid, Cysteine, Glutamic acid, Glycine, Histidine, Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Serine, Threonine, Tyrosine, and Valine, said polypeptide antigen comprising also a fluorescent group which emits fluorescent light at about 350 nm when activated at a wavelength of about 288 nm, and, if not protected by complexing with albumen, denaturating irreversibly at pH's exceeding about 5.

2. A composition according to claim 1 comprising an oil emulsion wherein an aqueous solution of a pH lower than about 3 containing CAPA constitutes the enclosed phase so as to be protected by the surrounding oil phase.

4,211,767

METHOD OF CONTROLLING THE SECRETION OF SEBUM IN HUMANS

Edmund Klein, 1325 N. Forest Rd., Williamsville, N.Y. 14221

Division of Ser. No. 843,053, Oct. 17, 1977, Pat. No. 4,129,647. This application Dec. 11, 1978, Ser. No. 968,170
Int. Cl.[2] A61K *31/04, 31/505, 37/00*
U.S. Cl. 424—92 **1 Claim**

1. A method for reducing the rate of secretion of sebum in humans which comprises administering to a sensitized human an antimitotic adjuvant agent in an amount sufficient to reduce the formation of sebum and thereby preclude formation of comedones and cysts together with a pharmaceutically acceptable carrier, said adjuvant agent being selected from the group consisting of 5-fluorouracil and uracil and said human having been sensitized by administering thereto an immunogen selected from the group consisting of dinitrochloro-benzene and Bacillus Calmette-Guerin Vaccine which induces or potentiates an immune response on local administration in an amount sufficient to reduce a delayed hypersensitivity reaction.

4,211,768

DIETETIC FOODSTUFF AND ITS PRODUCTION

Roland Vogel; Heinrich J. Nikolaus; Peter Müller, and Winfried Trinkaus, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 824,194, Aug. 12, 1977, Pat. No. 4,139,642.
This application Dec. 22, 1978, Ser. No. 972,591
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637426
The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.
Int. Cl.[2] A61K *35/12, 35/56*
U.S. Cl. 424—95 6 Claims

1. A method of suppressing appetite in a patient in need of such treatment which comprises ingesting an amount of 20–60 grams effective to suppress appetite of a granulated dietetic foodstuff having a low rate of decomposition in the digestive tract consisting essentially of a dried mixture of fat-free or low fat milk curds and casein in a dry solids ratio of about 1:1 to about 1:5, and having a particle size between about 0.5 and 5 mm, which is prepared by a process which comprises the steps of incorporating 2–5 parts of casein into 6 parts of moist milk curds; allowing the mixture to stand for a period of time sufficient to bind the excess water in the curds by swelling of the casein; whereby formation of a granulated and dried product is facilitated compared to milk curds alone.

4,211,769

PREPARATIONS FOR VAGINAL ADMINISTRATION

Hiroaki Okada, Suita; Iwao Yamazaki, and Takatsuka Yashiki, both of Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 17, 1978, Ser. No. 934,594
Claims priority, application Japan, Aug. 24, 1977, 52-101945; Apr. 3, 1978, 53-39337
Int. Cl.[2] A61K *37/00*
U.S. Cl. 424—177 9 Claims

1. A preparation for vaginal administration which contains 0.0001 to 5 percent by weight of a peptide having LH-RH activity homogeneously dispersed in an oleaginous or aqueous base, said preparation further containing homogeneously dispersed therein a water-soluble aliphatic polybasic carboxylic acid of 2 to 6 carbon atoms said polybasic carboxylic acid being present in an amount within the range of about 2 to 20 percent by weight when the preparation contains oleaginous base, or within the range of about 1 to 10 percent by weight when the preparation contains an aqueous base.

4,211,770

TREATMENT OF PSORIASIS INTRALESIONALLY WITH N^6-2'-O-DIBUTYRYL CYCLIC AMP

John J. Voorhees, Ann Arbor, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 425,340, Dec. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 324,012, Jan. 16, 1973, abandoned. This application Nov. 7, 1975, Ser. No. 629,914
Int. Cl.[2] A61K *31/70, 31/705*
U.S. Cl. 424—180 1 Claim

1. A method for treating psoriasis in humans comprising the administration to a human suffering from psoriasis of an effective dose for treating psoriasis of N^6-2'-O-dibutyryl cyclic AMP in a suitable pharmaceutical carrier wherein the administration is to the psoriatic lesion intralesionally.

4,211,771

TREATMENT OF HUMAN VIRAL DISEASES WITH 1-B-D-RIBOFURANOSYL-1,2,4-TRIAZOLE-3-CARBOXAMIDE

Joseph T. Witkowski, 5 Martha Dr., Morris Township, Morris County, N.J. 07960, and Roland K. Robins, 1131 Doven Dr., Provo, Utah 84602

Continuation-in-part of Ser. No. 690,912, May 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 617,432, Sep. 29, 1975, Pat. No. 3,976,545, which is a division of Ser. No. 340,332, Mar. 12, 1973, Pat. No. 3,927,216, which is a continuation-in-part of Ser. No. 240,252, Mar. 31, 1972, Pat. No. 3,798,209, which is a continuation-in-part of Ser. No. 149,017, Jun. 1, 1971, abandoned. This application Feb. 13, 1978, Ser. No. 877,313
Int. Cl.[2] A61K *31/41, 31/70;* C07H *19/12*
U.S. Cl. 424—180 20 Claims

1. A process of treating viral diseases in humans which comprises administering to the human patients an antiviral agent which has as its active component the compound 1-B-D-ribofuranosyl-1,2,4-triazole-3-carboxamide.

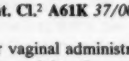
4,211,772

BENZOPYRAN GLYCOSIDE ACETALS AND KETALS

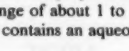
Francois Fauran, Castanet-Tolosan; Claude Feniou, Pessac; Jacqueline Mosser, St-Medard-en-Jalles; Annie Thibault, Le Bouscat; Claude Andre, Fontaine, and Gisele Prat, Talence, all of France, assignors to Laboratoires Sarget, Merignac, France

Filed Jun. 1, 1978, Ser. No. 911,634
Claims priority, application France, Jun. 2, 1977, 77 16817; May 10, 1978, 78 13807; May 10, 1978, 78 13808
Int. Cl.[2] A61K *31/70;* C07H *17/06*
U.S. Cl. 424—180 9 Claims

1. A benzopyran glycoside acetal or ketal at the sugar portion of the glycoside of a benzopyran glycoside selected from the group consisting of myricitrin, esculin, hesperidin, narigin, diosmin and glycosides of quercitin, and a carbonyl compound selected from the group consisting of



wherein R_1 and R_2 are the same or different and R_1, R_2=H, lower alkyl, phenyl, phenyl substituted by one or more substituents selected from the group consisting of hydroxyl, lower alkoxyl, halogen, nitro, amino, lower alkyl, and carboxyl, but excluding $R_1=R_2=H$;



wherein n=4–7; 2-adamantanone, 1-decalone, 2-decalone, said benzopyran glycoside acetal or ketal and said benzopyran glycoside containing phenolic hydroxyl.

8. A medicament comprising an acetal or ketal of claim 1 as its active principle, in combination with a pharmaceutically acceptable vehicle.

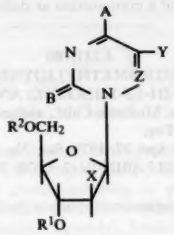
4,211,773

5-SUBSTITUTED 1-(2'-DEOXY-2'-SUBSTITUTED-β-D-ARABINOFURANOSYL)PYRIMIDINE NUCLEOSIDES

Carlos Lopez, New York; Kyoichi A. Watanabe, Portchester; Uri Reichman, and Jack J. Fox, both of White Plains, all of N.Y., assignors to Sloan Kettering Institute for Cancer Research, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,189
Int. Cl.[2] A61K *31/70;* C07H *17/00*
U.S. Cl. 424—180 10 Claims

1. Pyrimidine nucleosides having the formula



wherein

A is OR^3, SR^3, NR^3R^4 or NHacyl wherein R^3 and R^4 are the same or different and are hydrogen, lower alkyl of 1 to 7 carbon atoms, aralkyl containing 1 to 20 carbon atoms in the alkyl portion and 6–18 carbon atoms in the aryl portion, or aryl containing 6–18 carbon atoms;

NHacyl is alkanoyl containing 1–20 carbon atoms in the alkyl portion or aroyl amide selected from the group consisting of benzoyl and naphthoyl amide wherein the aromatic group may be substituted by alkyl or alkoxy of 1–20 carbon atoms, halo or nitro;

B is oxygen or sulfur;

X is halogen, alkylsulfonyl containing 1–20 carbon atoms in the alkyl portion or arylsulfonyl containing 6–18 carbon atoms in the aryl portion;

Y is halogen, amino, monoalkyl- containing 1–20 carbon atoms in the alkyl portion or monoaralkylamino containing 1 to 20 carbon atoms in the alkyl portion and 6–18 carbon atoms in the aryl portion, dialkylamino containing 1–20 carbon atoms in the alkyl portion, aminomethyl, hydroxymethyl, lower alkyl, aryl containing 6–18 carbon atoms, aralkyl containing 1 to 20 carbon atoms in the alkyl portion and 6–18 carbon atoms in the aryl portion, vinyl and substituted vinyl or ethynyl and substituted ethynyl;

Z is methyne or nitrogen;

R^1 and R^2 are the same or different and are hydrogen alkanoyl containing 1–20 carbon atoms in the alkyl portion or aroyl selected from the group consisting of benzoyl and naphthoyl wherein the aromatic group may be substituted by alkyl or alkoxy of 1–20 carbon atoms, halo or nitro.

9. Method of producing an anti-viral effect in a test animal which comprises administering to said animal an effective amount of a nucleoside of the formula defined in claim **1** or a pharmaceutically acceptable acid addition salt thereof.

10. Method of producing anti-tumor effect in a test animal which comprises administering to said animal an effective amount of a nucleoside of the formula defined in claim **1** or a pharmaceutically acceptable acid addition salt thereof.

4,211,774

BACTERIAL POLYSACCHARIDE S-21 AND COMPLEX THEREOF

Kenneth S. Kang, La Jolla, and George T. Veeder, III, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 842,646, Oct. 17, 1977, abandoned. This application Mar. 23, 1978, Ser. No. 889,163

Int. Cl.[2] **A61K** *31/715*; **C08B** *37/00*

U.S. Cl. 424—181 **5 Claims**

1. Heteropolysaccharide S-21, the heteropolysaccharide containing from about 30% to about 37% mannose, from about 26% to about 32% glucose, from about 19% to about 23% galactose and from about 15.3% to about 18.8% glucuronic acid, and having an acetyl content of from about 5.1% to about 6.3% and a pyruvate content of from about 4.5% to about 5.4%.

3. An aqueous composition containing from about 0.1% to about 2% of S-21 gum according to claim **1**.

4,211,775

RONNEL COMPOSITION AND USE TO PROMOTE NUTRITIONAL RESPONSE

Robert M. Ioset, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 766,283, Feb. 7, 1977, abandoned. This application Jan. 18, 1979, Ser. No. 4,420

Int. Cl.[2] **A61K** *31/66*

U.S. Cl. 424—225 **16 Claims**

1. The method of promoting a nutritional response, evidenced by at least one of increased average daily weight gain and greater feed conversion efficiency, of livestock and poultry selected from cloven hoof ruminant animals, swine and poultry which are substantially free of internal parasites, which comprises: introducing into the diet of an animal of the designated class from about 0.5 to about 2.5 milligrams of ronnel, bromophos, iodofenphos or a mixture of at least any two of such phosphate esters per kilogram of body weight per day substantially daily over a period of (a) at least about 28 days in the case of cloven hoof ruminant animals; (b) at least about 7 days in the case of swine; and at least 3 days in the case of poultry, the dietary addition of phosphate ester being at a nutritionally effective but substantially nonparasiticidal dosage level.

4,211,776

N-SUBSTITUTED 2-METHOXYBENZENESULPHONAMIDES, PROCESS FOR PREPARING THEM AND MEDICAMENTS CONTAINING THEM

Robert C. Moreau, Clichy, and Jean-Paul Fournier, Paris, both of France, assignors to Choay S.A., Paris, France

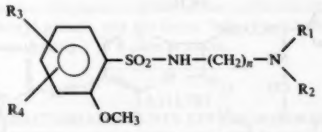
Division of Ser. No. 693,896, Jun. 8, 1976, Pat. No. 4,132,786. This application Oct. 2, 1978, Ser. No. 947,623

Claims priority, application France, Jun. 9, 1975, 75 17973

Int. Cl.[2] **A61K** *31/32, 31/40*; **C07D** *207/00, 209/00*

U.S. Cl. 424—228 **18 Claims**

1. An N-substituted benzenesulphonamide wherein the benzene ring is substituted in the 2-position by a methoxy group, which has the following general formula (I)



(I)

in which

n is 2 or 3

R_1 and R_2 jointly form with the nitrogen a heterocyclic ring having 5 or 6 members,

R_3 is a hydrogen atom, an NO_2 group, an NH_2 group or a halogen,

R_4 is a hydrogen atom, NH_2, a halogen or a sulphonamide group,

or the addition salts of (I) with a physiologically acceptable mineral or organic acid.

4,211,777

COMPOSITIONS COMPRISING A COMPOUND HAVING SODIUM CROMOGLYCATE ACTIVITY AND AMINOSALICYLIC ACID

Albert Chambers, Loughborough, England, assignor to Fisons Limited, London, England

Filed May 17, 1978, Ser. No. 906,974

Claims priority, application United Kingdom, Nov. 25, 1977, 49105/77

Int. Cl.[2] **A61K** *31/625*

U.S. Cl. 424—232 **17 Claims**

1. A pharmaceutical composition suitable for oesophageal or

rectal administration comprising one part by weight of 1,3-bis(2-carboxychromon-5-yloxy)propan-2-ol or a pharmaceutically acceptable salt thereof, as active ingredient, in combination with 0.8 to 35,000 parts of an aminosalicylic acid or a pharmaceutically acceptable salt or ester thereof.

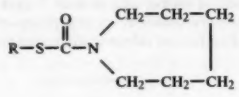
4,211,778

USE OF CARBOTHIOLATES AS INSECTICIDES

Carrol D. Steelman, Baton Route, and Doyle M. Chambers, Lake Charles, both of La., assignors to Louisiana State University Board of Supervisors, Baton Rouge, La.

Filed Sep. 14, 1978, Ser. No. 942,382
Int. Cl.[2] A01N *9/00*
U.S. Cl. 424—244 **8 Claims**

1. A process for killing insects by applying to said insects and to substrates susceptible to infestation by said insects or their larvae an insecticidally effective amount of a compound having the formula:



wherein R is a lower alkyl group.

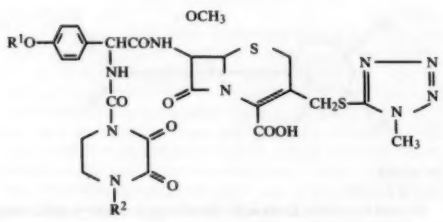
4,211,779

7α-METHOXY SUBSTITUTED CEPHALOSPORINS

Masayuki Narisada, Ibaraki; Teruji Tsuji, Takatsuki; Hiromu Matsumura, Ashiya, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Aug. 2, 1977, Ser. No. 821,314
Claims priority, application Japan, Aug. 17, 1976, 51-98376
Int. Cl.[2] A61K *31/545;* **C07D** *501/36*
U.S. Cl. 424—246 **31 Claims**

1. A member selected from the group consisting of
(a) a compound of the formula:



wherein
R^1 represents hydrogen, carbamoyl, acetyl, propionyl, butyryl, benzoyl, thiocarbamoyl, methylthiocarbamoyl, dimethylcarbamoyl, trichloroacetylcarbamoyl, acetylcarbamoyl, methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, or isopropoxycarbonyl;
R^2 represents methyl, ethyl, propyl, isopropyl, butyl, isobutyl, secondary-butyl, or tertiary-butyl;
(b) a lithium, sodium, potassium, magnesium, calcium or aluminum salt thereof at the 3-carboxy, and (c) an acetoxymethyl, pivaloyloxymethyl, methoxycarbonyloxymethyl, ethoxycarbonyloxyethyl, butoxycarbonyloxymethyl, phenacyl, phenyl, indanyl or phthalidyl ester thereof at the 3-carboxy.

30. An antibacterial composition which comprises an antibacterially effective amount of a member of the group as defined in claim **1** and a pharmaceutically acceptable carrier.

31. A method for the treatment of a bacterial infection which comprises administering orally or parenterally to a human or animal subject suffering from said infection an antibacterially effective amount of a composition as defined in claim **30**.

4,211,780

2,2-(THIOBIS(NITROMETHYLIDYNE))BIS(TETRAHYDRO-2H-1,3-THIAZINE) AND USE

Charles H. Tieman, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 27, 1979, Ser. No. 33,934
Int. Cl.[2] A01N *9/12;* **C07D** *279/06*
U.S. Cl. 424—246 **3 Claims**

1. 2,2'-(Thiobis(nitromethylidyne))bis(tetrahydro-2H-1,3-thiazine).

2. A composition adapted for controlling corn earworms which comprises an effective dosage of the compound of claim **1** together with an adjuvant therefor.

4,211,781

PROCESS FOR THE PREPARATION OF DUSTLESS QUINOXALINE-1,4-DIOXIDE ANIMAL FEED SUPPLEMENT PREMIXES

Kenneth G. Chapman, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 508,056, Sep. 23, 1974, abandoned. This application Aug. 19, 1975, Ser. No. 605,805
Int. Cl.[2] A61L *13/00;* **A23L** *3/36*
U.S. Cl. 424—250 **7 Claims**

1. A process for the production of a substantially dustless animal feed supplement premix containing an anti-bacterial quinoxaline-1,4-dioxide, said process comprising:
(a) blending about 0.5 to about 2.0% of a non-toxic oil with about 80 to about 95% of an edible carrier;
(b) mixing said blend with about 2 to about 12% of a pharmaceutically acceptable quinoxaline-1,4-dioxide antibacterial agent; and
(c) adding to and blending into the mixture obtained in step (b) about 1.5 to about 6.0% of said oil so that the total amount of oil added is in the range of about 2 to about 8% wherein all percentages refer to the weight percentage of said component in said premix.

4,211,782

PHARMACEUTICAL COMBINATION

John R. Vane, 7 White Angles, Beech Dell, Keston, Kent, and Salvador Moncada, 17 St. David's Close, West Wickham, Kent both of England

Filed Oct. 11, 1977, Ser. No. 841,049
Claims priority, application United Kingdom, Oct. 12, 1976, 42280/76
Int. Cl.[2] A61K *31/44, 31/47, 31/455, 31/415*
U.S. Cl. 424—263 **38 Claims**

1. A combination of substances which are in an amount effective to promote an anti-aggregatory action on blood platelets comprising:
(a) an anti-platelet aggregatory substance, an
(b) one or more of (i) an anti-oxidant able to minimize formation of lipid peroxides, and (ii) an inhibitor of thromboxane A_2 synthetase.

4,211,783

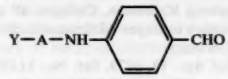
HYPOLIPIDEMIC AND ANTIATHEROSCLEROTIC NOVEL 4-(ARALKYL- AND HETEROARYLALKYLAMINO)PHENYL COMPOUNDS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 20, 1978, Ser. No. 890,569
Int. Cl.[2] C07C *95/08;* **A61K** *31/11*
U.S. Cl. 424—263 **8 Claims**

1. The method of inhibiting atherosclerotic lesion development in a mammal comprising the administration of an effec-

tive lesion-development inhibiting amount of a compound of the formula:



wherein A is a saturated or unsaturated alkylene group of 1–18 carbon atoms which may be branched or unbranched and Y is selected from the group consisting of phenyl, 1-naphthyl, 4-biphenylyl, 2-furyl, 2-thienyl, 3-thienyl, 4-thiazolyl, 2-imidazolyl, 4-imidazolyl, 2-pyridyl, 3-indolyl, 2-oxazolyl and each of the preceding moieties monosubstituted or disubstituted with alkyl, alkoxy or halogen with the proviso that the total number of carbon atoms in Y and A shall not exceed 24; and the pharmaceutically acceptable non-toxic acid-addition salts thereof to said mammal.

4,211,784

BIS(DITHIOCARBAMATE) SALTS

Charles W. Martin, Lake Jackson, and Eldon L. Ward, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 951,915, Oct. 16, 1978. This application May 21, 1979, Ser. No. 41,160

Int. Cl.[2] A01N *9/12;* **C07C** *155/08*

U.S. Cl. 424—267 **8 Claims**

1. A zinc amine complex of the formula

$$O-(CH_2CH_2NHCSS^{\ominus})_2Zn^{+2}.(HNR'R'')_y$$

wherein R′ and R″ are, individually, either $CH_2CH_2NH_2$ or CH_2CH_2OH and R′ and R″, taken together, is $-(CH_2)_5-$; and y has a value of from about 0.10 to about 2.

4,211,785

FUNGICIDAL COMPOSITION FOR USE IN AGRICULTURE AND HORTICULTURE AND ITS USE

Taizo Nakagawa, Ageo; Yutaka Watanabe, Saitama, and Kaoru Ohmori, Okegawa, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1979, Ser. No. 893

Claims priority, application Japan, Jan. 19, 1978, 53-3737

Int. Cl.[2] A01N *9/02*

U.S. Cl. 424—272 **5 Claims**

1. A fungicidal composition for use in agriculture and horticulture comprising a synergistic fungicidally effective amount of 4-methylsulfonyloxyphenyl-N-methylthiolcarbamate and 3-hydroxy-5-isoxazol in a weight ratio of 1:10–10:1 and an adjuvant therefor.

4,211,786

MERCAPTOACYLDIHYDROPYRAZOLE CARBOXYLIC ACID DERIVATIVES

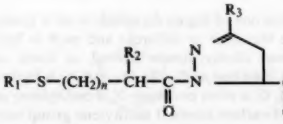
George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 8, 1979, Ser. No. 18,548

Int. Cl.[2] C07D *231/06;* **A61K** *31/415*

U.S. Cl. 424—273 P **19 Claims**

1. A compound having the formula



or a basic salt thereof, wherein R_1 is hydrogen, alkyl, aryl or arylalkyl;

R_2 is hydrogen or alkyl;

R_3 is aryl;

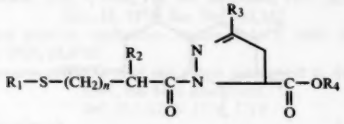
R_4 is hydrogen, alkyl or arylalkyl; and

n is 0, 1 or 2;

wherein the term "aryl" refers to phenyl or phenyl substituted with one, two or three halogen, alkyl, alkoxy, hydroxy,

nitro, amino, alkylamino, dialkylamino, trifluoromethyl, cyano or carboxyl groups, and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

19. A method for reducing blood pressure in mammals which comprises administering to a mammal in need thereof, an effective amount of a compound having the formula



or a basic salt thereof, wherein R_1 is hydrogen, aryl, or arylalkyl;

R_2 is hydrogen or alkyl;

R_3 is aryl;

R_4 is hydrogen, alkyl or arylalkyl; and

n is 0, 1 or 2;

wherein the term "aryl" refers to phenyl or phenyl substituted with one, two or three halogen, alkyl, alkoxy, hydroxy,

nitro, amino, alkylamino, dialkylamino, trifluoromethyl, cyano or carboxyl groups, and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

4,211,787

ANTIBACTERIAL AGENTS EFFECTIVE IN GROWTH PROMOTION AND INCREASED FEED UTILIZATION

Martin Scheer, Wuppertal; Heidrun Anke, Tuebingen; Wilfried König, Pinneberg, and Hans Zähner, Tuebingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

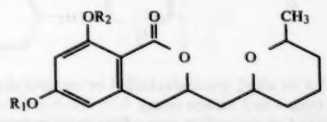
Filed Nov. 13, 1978, Ser. No. 960,206

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753513

Int. Cl.[2] A61K *31/335*

U.S. Cl. 424—279 **7 Claims**

1. A method of promoting and accelerating the growth and improving the feedstuff utilization of animals which comprise administering to the animals a compound of the formula



(I)

in which R_1 and R_2 independently denote a hydrogen atom or a methyl or acetyl group in an amount effective for providing or accelerating growth or for improving feedstuff utilization,

either alone, in admixture with a diluent, in the form of a medicament, or in the form of a treated animal feed.

4,211,788

COMPOUNDS

Hugh Cairns, Loughborough, and Anthony R. Payne, Castle Donington, both of England, assignors to Fisons Limited, London, England

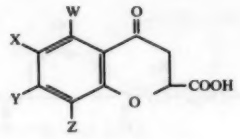
Filed May 11, 1978, Ser. No. 904,794

Claims priority, application United Kingdom, May 21, 1977, 21545/77

Int. Cl.[2] A61K *31/355;* **C07D** *311/22*

U.S. Cl. 424—283 **8 Claims**

1. A compound having the formula



in which

W is hydrogen or hydroxy,

an adjacent pair of X, Y and Z form a pentamethylene chain, the remaining substituent X or Z is hydrogen or alkyl C_1 to C_{10},

and pharmaceutically acceptable derivatives thereof.

8. A method of treating asthma, hay fever, trachoma, alimentary allergy or gastrointestinal allergy which comprises administering an effective amount of a compound according to claim 1 to a mammal suffering from such a condition.

4,211,789

OXYIMINO-SUBSTITUTED (1R,CIS)-CYCLOPROPANECARBOXYLATE PESTICIDES

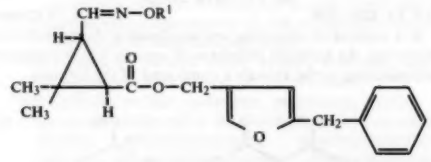
Steven A. Roman, Oakdale, and Samuel B. Soloway, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 911,743, Jun. 2, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,842

Int. Cl.[2] A01N *9/28;* **C07D** *307/54*

U.S. Cl. 424—285 **10 Claims**

1. A (1R,cis)cyclopropane compound, substantially free of other stereoisomers, of the formula



wherein R^1 is an alkyl, (cycloalkyl)alkyl or cycloalkyl group containing from 4 to 5 carbon atoms.

10. A method of controlling pests of the order Acarina at a locus which comprises applying to the pests or to the locus an acaricidally effective amount of an oxyimino-substituted (1R,cis)-cyclopropane compound according to claim 1.

4,211,790

COMBATING ARTHROPODS WITH AN OXIME ESTER OF N-CARBOXYLATED-CARBAMATE

Alfons Hartmann, Beckingen; Engelbert Kühle, Bergisch-Gladbach, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

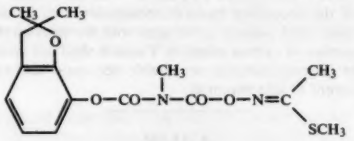
Filed Apr. 18, 1979, Ser. No. 31,097

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820360

Int. Cl.[2] C07D *307/86;* **A01N** *9/12*

U.S. Cl. 424—285 **4 Claims**

1. The compound of the formula



3. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of the compound according to claim 1.

4,211,791

INDANEDIONES

Derek R. Buckle, Redhill, and Harry Smith, Maplehurst, near Horsham, both of England, assignors to Beecham Group Limited, England

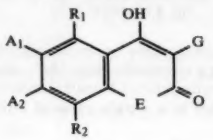
Division of Ser. No. 780,246, Mar. 22, 1978, Pat. No. 4,136,192, which is a continuation-in-part of Ser. No. 722,868, Sep. 13, 1976, abandoned. This application Nov. 27, 1978, Ser. No. 963,965

Claims priority, application United Kingdom, Sep. 23, 1975, 39041/75; Sep. 23, 1975, 39042/75; Feb. 4, 1976, 4321/76; May 22, 1976, 21276/76; May 22, 1976, 21277/76; Jun. 12, 1976, 24450/76; Feb. 11, 1977, 5833/77; Feb. 11, 1977, 5840/77; Feb. 11, 1977, 5856/77

Int. Cl.[2] C07C *79/36, 121/52;* **A61K** *31/275, 31/12*

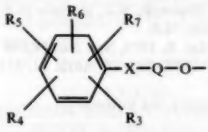
U.S. Cl. 424—304 **98 Claims**

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof wherein one of A_1 or A_2 is a group of the formula (II)



(II)

and R_1, R_2 and the one of A_1, or A_2 which is not a group of the formula (II) are the same or different and each is hydrogen, lower alkyl, lower alkoxy, lower alkenyl, or lower alkynyl; provided that at least one of R_1, R_2, A_1 and A_2 is hydrogen, E is covalent bond; G is nitro or cyano; X is methylene; and Q is alkylene of 1 to 8 carbon atoms, 1 methylene group within the group Q, other than a methylene covalently bound to an ether

oxygen, being unsubstituted or substituted by hydroxyl, and R_3, R_4, R_5, R_6 and R_7 are each hydrogen, halogen, nitro, hydroxy, cyano, carboxyl, amino, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower alkoxy carbonyl, lower alkanoyl, lower alkanoyloxy, mono- or di-lower alkyl amino, mono- or di-lower alkanoyl amino, phenyl, lower alkylphenyl, phenoxycarbonyl, or benzyloxycarbonyl.

4,211,792

OXYIMINO-SUBSTITUTED (1R,TRANS)-CYCLOPROPANECARBOXYLATE PESTICIDES

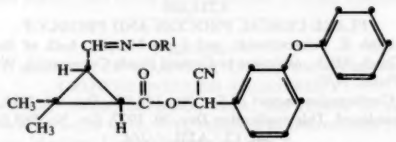
Steven A. Roman, Oakdale, and Samuel B. Soloway, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 911,743, Jun. 2, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,778

Int. Cl.[2] A01N *9/24;* **C07C** *131/02, 131/04*

U.S. Cl. 424—304 **10 Claims**

1. A (1R,trans)-cyclopropanecarboxylate, substantially free of other stereoisomers, of the formula



wherein R^1 is a (cycloalkyl)alkyl group containing from 3 to 6 carbon atoms and 4 to 8 total carbon atoms and the alcohol moiety is in the R,S-racemic or S-optical configuration.

7. A method of controlling pests at a locus which comprises applying to the pests or to the locus a pesticidally effective amount of an oxyimino-substituted (1R,trans)-cyclopropane carboxylate according to claim 1.

4,211,793

TRIETHYL CITRATE SOLUTIONS OF PGE-TYPE COMPOUNDS

Shahid A. Lodhi, Spring Valley, and Bernard Sims, Monsey, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 19, 1979, Ser. No. 21,859

Int. Cl.[2] A61K *31/215, 31/225, 31/19*

U.S. Cl. 424—305 **5 Claims**

1. A method for preserving the E-type prostaglandins during storage by dissolving the E-type prostaglandins in triethyl citrate.

4,211,794

N,N-DISUBSTITUTED AMINOMETHYLPHENYLETHANOLAMINES

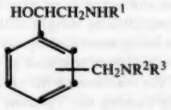
Allen R. Kraska, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,989

Int. Cl.[2] A61K *31/135;* **C07C** *91/16, 91/22*

U.S. Cl. 424—330 **11 Claims**

1. An N,N-disubstituted aminomethylphenylethanolamine of the formula



or its pharmacologically acceptable mineral acid or organic acid salt wherein:

R^1 is hydrogen or alkyl having 1 to 4 carbon atoms;

R^2 and R^3 are the same or different, each being normal alkyl of from 12 to 20 carbon atoms; and

the benzene ring is meta or para disubstituted.

10. A method of prophylactically controlling an interferon sensitive viral infection in a mammal, which comprises administering to the mammal an antivirally effective amount of an aminomethylphenylethanolamine of claim 1.

4,211,795

ANIMAL FEEDS

Francoise A. J. Leroy, St. Leu la Foret; Zelmen Zelter; Andre' C. Francois, both of Paris; Andre' Chassin, Saint-Junien, and Jacques Rodeaud, Chabanais, all of France, assignors to Institut National de la Recherche Agronomique and Aussedat-Rey, Paris, France

Continuation-in-part of Ser. No. 845,902, Jul. 29, 1969, and Ser. No. 524,837, Feb. 3, 1966, Pat. No. 3,507,662. This application Dec. 24, 1974, Ser. No. 532,153

Claims priority, application France, Feb. 3, 1965, 65.4208; Feb. 3, 1965, 65.4787

The portion of the term of this patent subsequent to Apr. 21, 1987, has been disclaimed.

Int. Cl.[2] A23K *1/04, 1/14*

U.S. Cl. 426—2 **7 Claims**

1. A modified nutritive proteinaceous dry feed for ruminant animals which serves as a digestible source of utilizable nitrogen comprising a complex of a proteinaceous animal feed and a short chain aldehyde, said modified feed being in the form of fine particles to facilitate homogeneous incorporation into other feed mixtures, said complex being relatively stable in respect to bacterial degradation leading to deammination as determined in an artificial rumen, but substantially completely accessible to proteolytic enzymes of the compartments of the animal's alimentary tract which follow the rumen and readily susceptible to enzymatic digestion in vitro by said proteolytic enzymes, the quantity of aldehyde employed in respect to the proteinaceous feed being not in excess of that required to produce resistance to bacterial deammination in the artificial rumen.

4,211,796

FEED INTAKE LIMITING COMPOSITION FOR CATTLE

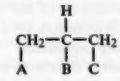
Kent J. Lanter, Belleville, Ill.; Norman L. Betz, St. Louis, and Danny L. Williams, Manchester, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Nov. 9, 1977, Ser. No. 849,740

Int. Cl.[2] A23K *1/00*

U.S. Cl. 426—2 **19 Claims**

1. A feed supplement for cattle containing an intake limiting composition, said feed supplement comprising grain, said intake limiting composition being present in an amount effective to limit intake of said supplement said composition comprising at least one member of a group of compounds having the formula:



wherein

A is a hydroxyl or R

B is a hydroxyl or R

C is a chlorine or C is a hydroxyl if B is also a hydroxyl and A is R

wherein

and R^1 is a C_9–C_{18} alkyl.

4,211,797

DRY DOG FOOD OF IMPROVED PALATABILITY

Charles J. Cante, St. Anne; Russell Downhour; Lee P. Randall, both of Kankakee, and Jeffrey D. Morgan, Peotone, all of Ill., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,757

Int. Cl.[2] A23K *1/00*

U.S. Cl. 426—2 **7 Claims**

1. In an improved, nutritionally balanced dry dog food comprising from 30 to 65% by weight of the food of farinaceous materials and from 25 to 40% of the total food of proteinaceous materials, the improvement which comprises:

a coating of a palatability improving composition comprising 0 to 4 parts tallow, 1 to 3 parts of enzyme lipolyzed tallow, and from 1 to 3 parts of a proteolytic enzyme digest of beef adjusted to approximately pH 4.0 the palatability improving composition being present at a level of from 4 to 8% based on the total weight of the dog food, the amount thereof being effective to significantly improve the palatability of the food when consumed by dogs.

4,211,798

PREPARATION OF PROTEIN ENRICHED YEAST PRODUCTS DEVOID OF CARBOHYDRATES

Allen W. Cater, Edina, Minn., assignor to CRS Co., St. Paul, Minn.

Filed Nov. 25, 1977, Ser. No. 854,718

Int. Cl.[2] A23J *1/18;* A23L *1/28;* C12C *11/18*

U.S. Cl. 426—41 **3 Claims**

1. The method of producing carbohydrate-free protein enriched yeast products from cheese whey including the steps of:

(a) preparing a growth medium comprising cheese whey containing yeast growth nutrients;

(b) heating said growth medium to a temperature of about 93° C. and maintaining said temperature for approximately 25 minutes to precipitate whey proteins;

(c) adding yeast to the growth medium;

(d) permitting the yeast to ferment at about 30° C. with aeration whereby lactose and lactic acid in the growth medium are essentially consumed by the yeast and converted into carbon dioxide and yeast cell substance;

(e) subjecting the fermented growth medium from step (d) to a centrifugal operation to separate therefrom a slurry containing substantially all of the yeast cells;

(f) adding to the slurry from step (e) a carbohydrate containing protein enriching ingredient;

(g) permitting the yeast in the slurry from step (f) to undergo further fermentation at about 30° C. with aeration whereby the carbohydrate of the protein enriching ingredient is essentially consumed by the yeast and converted into carbon dioxide and yeast cell substance;

(h) concentrating the slurry from step (g); and

(i) drying the resultant concentrate to obtain said carbohydrate-free protein enriched yeast product.

4,211,799

METHODS FOR MAKING FLOCCULATION-RESISTANT CITRUS JUICE

Ekkehard Grampp, Egelsbach; Reinhold Schmitt, Zwingenberg, and Helmut Uhlig, Rossdorf, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,697

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 274688

Int. Cl.[2] A23L *2/30*

U.S. Cl. 426—50 **7 Claims**

1. The method of making citrus juice resistant to flocculation on storage, which method comprises treating naturally turbid citrus juice having a pH below 2.5 with a pectinase of the polygalacturonase-pectinesterase type at a temperature below 30° C. until the alcohol test for pectin is negative, adding sodium-calcium-bentonite to the juice as a decantation auxiliary after the pectinase treatment, and then decanting the supernatant juice after settling, whereby a flocculation-resistant stably-turbid juice is obtained.

4,211,800

FLAKE CEREAL PROCESS AND PRODUCT

Rudolph K. Scharschmidt, and Lynn Murphy, both of Battle Creek, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 749,486, Dec. 10, 1976, abandoned. This application Dec. 30, 1977, Ser. No. 865,804

Int. Cl.[2] A23L *1/164*

U.S. Cl. 426—93 **12 Claims**

1. A package of cereal flake product of improved storage stability without added stabilizers consisting of toasted cereal flakes substantially uniformly coated with an edible fat at a level of from about 3% to about 10% by weight of said flake, said fat having an iodine number of less than about 25, the matrix of said flake being substantially free of added fat.

4,211,801

PROCESS FOR THE TREATMENT OF COMMINUTED OATS

Richard W. Oughton, Odessa, Canada, assignor to Du Pont of Canada Limited, Montreal, Canada

Continuation of Ser. No. 695,206, Jun. 11, 1976, abandoned. This application Sep. 28, 1978, Ser. No. 946,716

Claims priority, application United Kingdom, Jun. 17, 1975, 25804/75

Int. Cl.[2] A23L *1/36*

U.S. Cl. 426—430 **13 Claims**

1. A process for the separation of a substantially gum-free flour from oats, said process comprising:

(a) admixing comminuted dehulled oats with an organic solvent capable of extracting oil from said oats for a time sufficient to substantially de-oil said oats, said solvent being selected from the group consisting of pentane, hexane, heptane, cyclohexane, and alcohols of 1–4 carbon atoms, and mixtures thereof; and

(b) separating the admixture of comminuted oats and solvent into at least two fractions, one fraction having bran as a substantial part of the solid component and a second fraction having substantially gum-free flour as the major solid component, the amount of flour separated from the admixture being at least 20% by weight of the comminuted oats, said admixture being separated by agitating the admixture under mixing conditions adjusted to cause a nonuniform distribution of the fractions of the comminuted oats in the solvent thereby causing the fractions to settle at different rates, whereby separation of the fractions is effected.

4,211,802
METHOD OF MAKING A COOKING VESSEL RELEASE MATERIAL

Wayne C. Carey, 71 Salt St., Rittman, Ohio 44270

Continuation-in-part of Ser. No. 462,787, Apr. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 341,400, Mar. 15, 1973, Pat. No. 3,821,007. This application Dec. 21, 1978, Ser. No. 971,725
Int. Cl.[2] A23D *5/00*
U.S. Cl. 426—609 8 Claims

5. A process for making a cooking vessel release paste consisting essentially of the steps of:

adding to a blending container 50 parts by weight of clear flour,

23–30 parts by weight of a soybean flour,

from 95–110 parts by weight of a hydrogenated soybean oil having a capillary melting point of approximately 117° F.,

from 118–140 parts by weight of a soybean oil stabilized against oxidation, and

from 5–10 parts of lecithin,

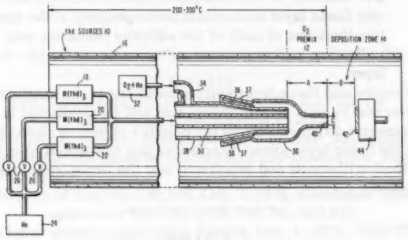
heating and mixing said ingredients in said blending container to a temperature of from about 70° F. to about 130° F.,

and placing said mixed ingredients into a carrier container.

4,211,803
CVD GROWTH OF MAGNETIC OXIDE FILMS HAVING GROWTH INDUCED ANISOTROPY

Melvyn E. Cowher, Sturbridge, Mass., and Thomas O. Sedgwick, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 824,689, Aug. 15, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 947,388
Int. Cl.[2] H01F *10/02*
U.S. Cl. 427—128 17 Claims



1. A CVD process for depositing single crystal magnetic oxide films on substrates, said films exhibiting growth induced magnetic anisotropy, comprising the steps of:

volatilizing organometallic compounds containing elements of said film to be deposited onto said substrate and passing said volatilized compounds in a gas stream toward said substrate,

combining said volatilized compounds with a gas stream containing about 30–50 mole percent O_2 to produce a mixture of gaseous O_2 and said volatilized compounds, said combining occurring at a temperature sufficiently low that said O_2 does not break up said organometallic compound during said mixing,

blowing said mixed gases to said substrate, said substrate being in a plane which is transverse to the direction of movement of said mixed gases and being heated to a temperature at which said O_2 breaks up said organometallic compounds to free said elements for reaction with O_2 and deposition onto said substrate to produce said film having sufficient growth induced anisotropy to support stable magnetic domains therein, said substrate temperature being less than that which would substantially anneal out said growth induced anisotropy to reduce said anisotropy to a level which is insufficient to support stable bubble domains therein.

4,211,804
POLYISOCYANATE COMPOSITIONS

Donald F. Brizzolara, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1978, Ser. No. 970,229
Int. Cl.[2] B05D *3/02*
U.S. Cl. 427—377 12 Claims

1. A composition consisting essentially of a solution in an aliphatic diisocyanate of the reaction product of at least two moles of said aliphatic diisocyanate with the addition product formed from one mole of a diprimary aliphatic diamine and at least one mole of an activated monoethylenic compound.

8. A polyurethane prepolymer prepared by a reaction of a composition of any of the claims 1–7 and a polyhydroxy compound in such proportions that the product has pendant—NCO end groups.

9. A moisture-curable polyurethane prepolymer consisting essentially of a prepolymer of claim 8 and of a moisture cure catalyst.

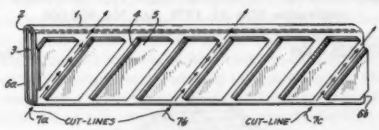
10. A composition of claim 9 in which the catalyst is a tetravalent organotin compound, which is present at a concentration equivalent to about 0.01–2% by weight of dibutyltin dilaurate based on nonvolatiles.

12. A method of protecting a surface by applying to the surface a coating of a composition of claim 10 and allowing the coating to moisture-cure in the air.

4,211,805
SELF-ADHESIVE LABELING ARTICLE

Coleman R. Chamberlin, Thompson Ridge, N.Y., assignor to Cel-U-Dex, Inc., New Windsor, N.Y.

Continuation of Ser. No. 801,090, May 27, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,267
Int. Cl.[2] G09F *3/20*
U.S. Cl. 428—40 6 Claims



1. A label holder device for holding substantially rectangular labels, comprising: an elongated tubular element having at least one open end for receiving a given label therein and having a substantially planar longitudinal rear surface, wherein the tubular element is cuttable at different points along the length thereof to obtain a label holder having a desired length substantially equal to the length of the given label; and means for guiding the cutting of the tubular element to configure at least one end of the holder to effect exposure of only one corner of the given label when same is completely inserted in the holder, while imparting the desired length to the holder comprising a plurality of spaced apart adhesive elements disposed on the planar rear surface for affixing the holder to a given plane.

4,211,806

TREATED FABRIC STRUCTURE

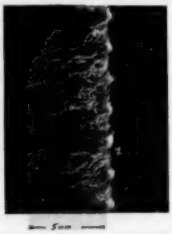
Frank P. Civardi, Wayne, and Frederic C. Loew, Ridgewood, both of N.J., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 545,548, Jan. 30, 1975, Pat. No. 4,122,223, and a continuation-in-part of Ser. No. 474,406, May 30, 1974, abandoned, and Ser. No. 398,696, Sep. 19, 1973, abandoned, said Ser. No. 545,548, is a continuation-in-part of Ser. No. 474,406, , which is a continuation-in-part of Ser. No. 398,696, , abandoned. This application Dec. 27, 1977, Ser. No. 864,836

The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.

Int. Cl.[2] D06C *11/00*

U.S. Cl. 428—91 **36 Claims**



1. An artificial leather sheet material for lasted shoe uppers comprising a backing layer of permeable fabric of interlaced multifilament yarns and a continuous cellular layer of blown plasticized polyvinyl chloride on its upper face wherein the improvement comprises that the lower face of said fabric has a nap of fibers teased from said yarns and bonded together, said bonded nap being open and compressible, having a void volume about 50% and a thickness of about 0.1 to 1 mm, said shoe upper sheet material having a thickness of at least about 1.2 mm, said bonded nap comprising said teased-out fibers and an elastomeric bonding agent.

4,211,807

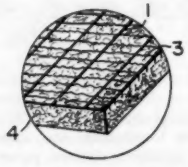
REINFORCED NON-WOVEN FABRICS AND METHOD OF MAKING SAME

Masahide Yazawa, and Kazuhiko Kurihara, both of Tokyo, Japan, assignors to Polymer Processing Research Institute Ltd. and Sekisui Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 603,206, Aug. 8, 1975, abandoned. This application May 15, 1978, Ser. No. 906,004

Int. Cl.[2] B32B *5/10*; D04H *1/62, 1/74*

U.S. Cl. 428—109 **4 Claims**



1. A non-woven product comprising

(a) a fleece layer of short fibers in random arrangement,

(b) one surface of said fleece layer having affixed thereto a plurality of elongated yarn members that are spaced apart from each other at regular intervals in generally parallel rows, all of said yarn members extending only in a longitudinal direction with respect to said fleece layer, and

(c) said surface of said fleece layer containing a plurality of essentially continuous lines of joined short fibers of the fleece layer by heat meltable adhesive material almost entirely penetrating down into the fleece layer, said adhesive lines being disposed generally parallel to each other and transversely with respect to said plurality of yarn members, said adhesive lines consisting of thicker lines which are composed of joined short fibers of the fleece layer by adhesive material that has penetrated almost entirely through the fleece layer in the thickness direction and at least one thinner line disposed between every adjacent pair of said thicker adhesive lines, said thinner lines being composed of short fibers of the fleece layer joined by adhesive material penetrating into said fleece layer a lesser distance than that of said thicker lines.

3. The method for producing a non-woven product which comprises:

(a) providing a network composed of

(1) a plurality of elongated yarn members disposed in a plane, said yarn members being spaced apart from each other at regular intervals in generally parallel rows in the longitudinal direction of the network, and

(2) a plurality of adhesive filaments consisting solely of heat meltable adhesive material in a solid state, said adhesive filaments being disposed generally parallel to each other and transversely to said plurality of yarn members, said arrangement of adhesive filaments including thick adhesive filaments at spaced apart intervals and at least one thin adhesive filament disposed between each sequence of two thick adhesive filaments,

(b) providing a fleece layer of short fibers in random arrangement,

(c) causing one surface of said fleece layer to adhere to said network by heat pressing the network to cause said adhesive filaments to melt completely and penetrate down into said fleece layer to an extent corresponding to the respective thickness of each of the adhesive filaments, and

(d) allowing said penetrated adhesive to set in the fleece layer.

whereby said fleece layer will be reinforced in the longitudinal direction by said yarn members and will be reinforced in the transverse direction only by the plurality of lines of short fibers of the fleece layer joined by adhesive that has melted from said adhesive filaments and penetrated into the fleece layer and set therein.

4,211,808

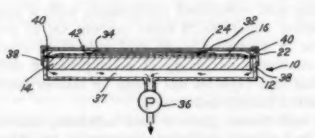
BACKING SHEET

Richard A. Trankle, Chicago, Ill., assignor to Roberts & Porter, Inc., Chicago, Ill.

Filed Nov. 10, 1977, Ser. No. 850,080

Int. Cl.[2] B32B *7/00*

U.S. Cl. 428—131 **16 Claims**



1. A backing sheet for use in the exposure of photosensitive materials under vacuum conditions comprising

a first layer of porous material for receiving the photosensitive materials for exposure thereon,

a second layer of flexible, but substantially rigid, material beneath said first layer and attached directly thereto, and

a third layer of a flexible material beneath said second layer,

said layers being attached together to form said backing sheet.

4,211,809

SELF-ADHERING, TRANSFERABLE LAYER OF VARNISH (LACQUER) OR COLOR

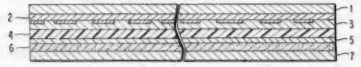
Franz Barta, Vienna, Austria, assignor to BSB Aktiengesellschaft fur Mechanische Beschriftung und Dekoration, Basel, Switzerland

Continuation of Ser. No. 730,508, Oct. 7, 1976, abandoned. This application Nov. 20, 1978, Ser. No. 961,909

Claims priority, application Austria, Oct. 7, 1975, 7658/75

Int. Cl.[2] B32B *3/10, 7/00*

U.S. Cl. 428—201 **7 Claims**



1. In a self-adhering transfer material comprising in descending order an upper foil-like or paper-like carrier layer, one or more transferable designed layers, releasably connected to the carrier layer and a lower adhesive layer, wherein the improvement comprises an intermediate layer between the adhesive layer and the one or more design layers, the intermediate layer consisting essentially of a polyester resin hardenable into a permanently elastic formstable layer, said polyester resin being adhesively bondable and compatible with both the adhesive layer and the one or more design layers.

4,211,810

SELF-ADHERING, TRANSFERABLE LAYER OF VARNISH (LACQUER) OR COLOR

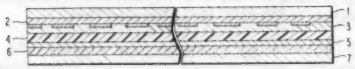
Franz Barta, Vienna, Austria, assignor to BSB Aktiengesellschaft fur Mechanische Beschriftung und Dekoration, Basel, Switzerland

Division of Ser. No. 730,508, Oct. 7, 1976, abandoned. This application Nov. 20, 1978, Ser. No. 961,910

Claims priority, application Austria, Oct. 7, 1975, 7658/75

Int. Cl.[2] B41M *3/12;* **B05D** *3/02*

U.S. Cl. 428—201 **11 Claims**



1. A process for the production of a self-adhering transfer material comprising in descending order an upper foil-like or paper-like carrier layer, one or more transferable design layers which are releasably connected to the carrier layer and a lower adhesive layer, which process comprises applying an intermediate layer consisting essentially of a polyester resin hardenable to a permanently elastic form-stable layer, said polyester layer being adhesively bondable and compatible with both the adhesive layer and the one or more design layers, said polyester layer applied in a hardenable state to the underside of the one or more transferable design layers and prior to the complete hardening or drying out of said intermediate layer, applying the adhesive layer to the intermediate layer.

4,211,811

LAMINATED OLEFINIC POLYMER SHEETS FOR PACKAGING

Fosco Bordini, and Luigi Mauri, both of Terni, Italy, assignors to Moplefan S.p.A., Milan, Italy

Filed Dec. 19, 1977, Ser. No. 861,945

Claims priority, application Italy, Dec. 20, 1976, 30637 A/76

Int. Cl.[2] B32B *27/06*

U.S. Cl. 428—220 **8 Claims**

1. A bonded sheet for packaging, having a thickness ranging from 20 to 200 microns and consisting essentially of two films, a first film and a second film, prepared from substantially crystalline polyolefin polymers, or mixtures thereof, wherein at least the first film of the two films is a film oriented by the stretching of polypropylene essentially constituted by isotactic macromolecules and having a melt index between 0.5 and 5, and wherein at least one of the two films is coated, on the surface thereof which is in contact with the other film, with a metallized layer having a resistivity between 1 and 5 Ohms.

4,211,812

OPENWORK TEXTILE STRUCTURE AND PROCESS FOR MANUFACTURE THEREOF

Daniel Braconnier, Ecully; Jean Joly, Craponne, and Michele Renault, Venissieux, all of France, assignors to Rhone-Poulenc-Textile, Lyon, France

Filed Apr. 14, 1977, Ser. No. 787,586

Claims priority, application France, Apr. 22, 1976, 76 13078

Int. Cl.[2] D03D *3/00*

U.S. Cl. 428—224 **7 Claims**

3. A three-dimensional openwork textile structure comprising at least two two-dimensional openwork textile structures, each two-dimensional openwork textile structure formed from at least one textile web and including a plurality of open areas distributed over its surface, each open area defined by at least one compressed zone of the textile materials forming the at least one textile web, wherein in each compressed zone the textile materials are parallel to each other, and by at least one zone of said textile materials which has a greater apparent diameter, and wherein the at least two two-dimensional openwork textile structures are secured to each other at a plurality of compressed zones containing parallel textile materials from each of at least two adjacent two-dimensional openwork textile structures.

4,211,813

PHOTOLUMINESCENT TEXTILE MATERIALS

Philippe E. Gravisse, Paris, France, and Jacques F. Van Schoote, Ghent, Belgium, assignors to B.R.I.C. (Burea de Recherche pour l'Innovation et la Convervence, France and N.V. Anciens Etablissements Alsberge et Van Oost, Belgium

Filed Mar. 20, 1978, Ser. No. 888,037

Claims priority, application France, Mar. 25, 1977, 77 09042

Int. Cl.[2] C09K *11/00, 11/10*

U.S. Cl. 428—263 **16 Claims**

1. A photoluminescent flexible sheet material having an enhanced premability to water vapor comprising:

a flexible substrate of sheet material having at least one coating film adhering to a surface of said substrate;

said film comprising at least one synthetic resin compatible with said flexible substrate and having dispersed therethrough a photoluminescent complex having enhanced stability to ultraviolet energy and atmospheric moisture;

said photoluminescent complex comprising particles of at least one phosphorescent metal sulphide and an organic substance which absorbs radiant energy of short wavelengths and emits the energy on a wavelength lying within the absorption spectrum of said phosphorescent metal sulphide.

4,211,814
METHOD FOR THE FIREPROOFING OF SYNTHETIC FIBER MATERIAL

Hermann Nachbur, Dornach, and Peter Rohringer, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 809,824, Jun. 24, 1977, abandoned, which is a continuation of Ser. No. 638,227, Dec. 5, 1975, abandoned. This application Aug. 8, 1978, Ser. No. 932,082
Claims priority, application Switzerland, Dec. 6, 1974, 16252/74
Int. Cl.[2] C09K *3/28*; B05D *3/02*; D06M *13/08*
U.S. Cl. 428—265 **15 Claims**

1. A process for the fireproofing of synthetic textile fiber materials consisting of polyester or polyamide, which comprises, treating said materials after their manufacture with a fireproofing composition containing at least

(a) a bromine compound of the formula

$$Br_m-A_1-R(Br_{p-1})-A_2-Br_n$$

wherein

A_1 and A_2 each represent cycloalkyl having 5 to 8 ring carbon atoms,

R represents alkylene having 1 to 4 carbon atoms, m and n each represent an integer from 2 to 7, and

p represents an integer from 1 to 5, and

(c) a dispersing agent;

and then subjecting said materials to a heat treatment, the heat treatment being such that the deposit of constituent (a) after the heat treatment is 0.5 to 12 percent by weight, relative to the treated material.

4,211,815
WATERPROOFING OF TEXTILES

Hans Deiner, Hainhofen, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,779
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1973, 2359966
Int. Cl.[2] B32B *27/12*
U.S. Cl. 428—290 **8 Claims**

1. A process for making fibrous material water repellent, comprising the step of treating the fibrous material with an aqueous liquor which contains an emulsion of an organopolysiloxane, which contains hydrogen atoms bonded to silicon atoms, and an emulsion of oxidized polyethylene, wherein the dry weight ratio of organopolysiloxane to oxidized polyethylene is 100:3–152.

8. The fibrous material treated according to the process of claim 1.

4,211,816
SELFBONDED NONWOVEN FABRICS

Hazael E. Booker; Barrie L. Davies; Alfred J. Hughes, and Charles J. Shimalla, all of Charlotte, N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 776,565, Mar. 11, 1977, abandoned. This application Mar. 1, 1978, Ser. No. 881,472
Int. Cl.[2] D02G *3/00*; D04H *1/04*
U.S. Cl. 428—296 **10 Claims**

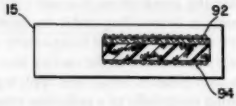
1. An improved selfbonded nonwoven fabric having a weight of at least 40 gm/meter^2 and consisting essentially of fibrous non-particulate material and comprising at least seventy percent, based on total weight of fibers in the fabric, of drawn continuous heterofilaments comprising at least two fiber-forming synthetic polymer components arranged in sheath/core manner, the core being isotactic polypropylene physically entrapped in a network of bonded sheaths having a melting point at least 10° C. lower than that of the core, wherein the improvement comprises:

said sheath is high density polyethylene having a solid state density in the range from 0.930 to 0.965 gm/cc and having a melt flow index from 1 to 50 as measured by ASTM D-1238; said high density polyethylene comprises from 5 to 30 weight percent of said heterofilaments; and said fabric has an Elmendorf tear strength (ASTM D-1424), T, of at least 6 lb and a normalized grab tensile strength, G, of at least 120 lb (ASTM D-1117) for a 140 gm/meter^2 fabric and the value of the product TxG is at least 1,200.

4,211,817
BONDED LAMINATED STRUCTURE AND METHOD FOR PRODUCING SUCH

George S. Buck, Jr., and R. G. Weyker, both of Memphis, Tenn., assignors to Fiberlok, Inc., Memphis, Tenn.

Filed Jun. 1, 1978, Ser. No. 911,536
Int. Cl.[2] B32B *3/26*, *5/18*
U.S. Cl. 428—310 **20 Claims**



13. A bonded laminated flexible structure consisting essentially of fibers contacted with a copolymer of vinyl chloride and vinylidene chloride formed into a batt and a cellular material strongly adhered to the batt by means of first heating to the melting point of the copolymer and then compressing the batt and cellular material to form an adhered structure.

4,211,818

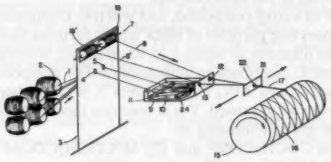
COMPOSITE STRANDS OF RESIN, CARBON AND GLASS AND PRODUCT FORMED FROM SAID STRANDS

Richard H. Ackley, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 856,149, Nov. 30, 1977, Pat. No. 3,167,429. This application Feb. 2, 1979, Ser. No. 8,671

Int. Cl.[2] B32B 9/00; D02G 3/00

U.S. Cl. 428—367 **19 Claims**



10. A fiber resin composite article comprising helically wound strands and resin wherein said helically wound strands comprise composite strands comprising resin, a plurality of continuous glass fiber strands and at least one continuous carbon fiber strand wherein said glass and carbon strands are coextensive.

4,211,819

HEAT-MELT ADHESIVE PROPYLENE POLYMER FIBERS

Kohichi Kunimune; Seigo Inadomi, and Satomi Yoshida, all of Moriyamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 23, 1978, Ser. No. 908,678

Claims priority, application Japan, May 24, 1977, 52-60016

Int. Cl.[2] D02G 3/00

U.S. Cl. 428—374 **6 Claims**

1. Heat-melt adhesive fibers comprising a resin consisting of:

(a) 50–100% of a crystalline propylene random terpolymer consisting of

(1) 84–98% by weight of propylene,

(2) 1–15% by weight of butene-1, and

(3) 1–10% by weight of ethylene and

(b) 0–50% by weight of a substantially non-crystalline ethylene-propylene random copolymer,

said resin forming at least 50% of the cross-sectional circumference of said fibers.

4,211,820

BROWN GLASS-CERAMIC ARTICLES

Francis A. Cantaloupe, Horseheads, N.Y.; Robert W. Colegrove, Lawrenceville, Pa.; John E. Megles, Jr., and Hermann L. Rittler, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,480

Int. Cl.[2] C03C 3/22, 3/04

U.S. Cl. 428—410 **1 Claim**

1. An essentially transparent glassceramic article having a coefficient of thermal expansion over the temperature interval of 25°–700° C. of about $-5\text{–}10\times10^{-7}$/°C., a modulus of rupture of about 8000–18,000 psi, a change of length of no more than about 900 PPM when exposed to a temperature of 700° C. for a period of 1000 hours, and which, in thickness of about 5 mm. will display a warm brown coloration and a transmittance of about 20–60%, when measured at 800 nm, consisting of a surface layer containing beta-quartz solid solution crystals as the predominant crystal phase with, optionally, a minor proportion of beta-spodumene solid solution crystals dispersed within a glassy matrix and an interior portion containing beta-spodumene solid solution crystals as the predominant crystal phase dispersed within a glassy matrix, said crystals constituting more than 50% by volume of said article and having diameters of less than one micron, said glass-ceramic article having an overall composition consisting essentially, an analyzed in weight percent on the oxide basis, of about 2.5–4.5% Li_2O, 1–2% MgO, 1–2% ZnO, 19.5–21% Al_2O_3, 66.5–68% SiO_2, 4–5% TiO_2, and 0.02–0.2% V_2O_5, the sum of those components constituting at least about 98% of said article.

4,211,821

MONOCRYSTALLINE LIKE LAYERS, PROCESSES OF MANUFACTURING SUCH LAYERS, AND ARTICLES COMPRISING SUCH LAYERS

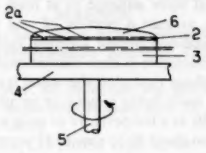
Armand Hadni, Nancy, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Jun. 13, 1977, Ser. No. 806,103

Claims priority, application France, Jun. 14, 1976, 76 17957

Int. Cl.[2] B32B 9/04; B01J 17/00

U.S. Cl. 428—411 **12 Claims**



1. Article comprising:

a first layer in contact with a face of a monocrystalline support, said first layer being made out of a second material which is different from the material constituting the support, said first layer comprising openings of small cross-section;

a second layer made out of a third material different from the support material and from the second material, said second layer being in contact with said first layer and with the parts of the monocrystalline support aligned with the openings in the said first layer, said second layer being of small thickness controlled within limits and having openings of small cross-section therein because of its thickness; and

a thin monocrystalline-like layer being disposed on said second layer, said thin monocrystalline-like layer being made out of a given material which is the same as or has a structure which is the same as or related to that of the support material.

3. Process of growing a thin monocrystalline-like layer of a given material which comprises:

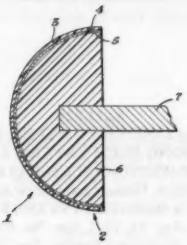
depositing an intermediary layer having two superposed parts on a monocrystalline support made out of the said given material or out of a material having same or a related structure, said parts of this intermediary layer being made out of different materials which differ from the given material, the first of these parts being directly in contact with the support and having openings of small cross-section distributed over its surface, and the second part covering the first part and having a small thickness controlled within limits and presenting, because of its thickness, submicroscopic openings at least in front of the openings of the first part, and

growing said thin monocrystalline-like layer on said intermediary layer.

4,211,822
HIGHLY REFLECTIVE MULTILAYER METAL/POLYMER COMPOSITES

Virgil B. Kurfman, Midland, and Raymond E. Gransden, Jr., Beaverton, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 757,706, Jan. 7, 1977, Pat. No. 4,115,619. This application Dec. 8, 1977, Ser. No. 858,592
Int. Cl.[2] B32B *5/00, 15/08*
U.S. Cl. 428—412 **13 Claims**



1. A formed metal/organic polymer composite comprising a normally solid thermoplastic polymer layer and a normally solid, soft metal layer adhered to at least one surface of the polymer layer, at least a portion of said formed composite having been modified during forming such that the portion undergoes a cumulative surface dimensional change of at least 20 percent, without rupturing the metal layer or the polymer layer, said soft metal being a metal or an alloy of two or more metals that melts at a temperature or over a range of temperatures that is from about 80 to about 135 percent of the temperature used in forming, said temperatures being in °K.

4,211,823
TINTABLE COATINGS AND ARTICLES HAVING SUCH COATINGS

Masaharu Suzuki, Takatsuki; Takashi Taniguchi, Shiga, and Hideki Yamagishi, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 884,273, Mar. 7, 1978, abandoned. This application May 11, 1979, Ser. No. 38,205
Claims priority, application Japan, Nov. 3, 1977, 52/26109
Int. Cl.[2] C08L *83/04;* **B32B** *27/08, 27/30, 27/28*
U.S. Cl. 428—412 **19 Claims**

1. A coating composition comprising components A, B, C and D wherein

Component A is:

A hydrolysate of a silane compound containing an epoxy group and not less than two alkoxy groups which are directly bonded to an Si atom in the molecule;

Component B comprises fine particles of silica which particles have an average diameter of about 1 to 100 mμ, and wherein

Component C comprises an aluminum chelate compound having the formula AlX_nY_{3-n} wherein X is OL (wherein L is a lower alkyl group), Y is at least one ligand produced from the group consisting of:

(1) $M'COCH_2COM^2$ and (2) $M^3COCH_2COOM^4$

wherein (M', M^2, M^3 and M^4 are lower alkyl groups) and n is 0, 1 or 2, and wherein

Component D comprises a solvent comprising more than about 1 weight percent water, the amount of Component B being about 1 to 500 parts by weight per 100 parts by weight of Component A, and the amount of Component C being about 0.01 to 50 parts by weight per 100 parts by weight of Component A.

2. A coating composition comprising components A, B, C and D wherein

Component A comprises

(1) A hydrolysate of a silane compound containing an epoxy group and not less than two alkoxy groups which are directly bonded to an Si atom in the molecule, and

(2) at least one compound selected from the group consisting of:

(2.1) A compound containing a silanol and/or siloxane group in the molecule and

(2.2) an epoxy compound, and wherein Component B comprises fine particles of silica which particles have an average diameter of about 1 to 100 mμ, and wherein Component C comprises an aluminum chelate compound having the formula AlX_nY_{3-n} wherein X is OL (wherein L is a lower alkyl group), Y is at least one ligand produced from the group consisting of:

(1) $M'COCH_2COM^2$ and (2) $M^3COCH_2COOM^4$ wherein M', M^2, M^3 and M^4 are lower alkyl groups and n is 0, 1 or 2, and wherein Component D comprises a solvent comprising more than about 1 weight percent water, the amount of Component B being about 1 to 500 parts by weight per 100 parts by weight of Component A, the amount of Component C being about 0.01 to 50 parts by weight per 100 parts by weight of Component A, the calculated weight percent of (1) in Component A in film being more than about 10, and the calculated weight percent of the sum of (1) and (2.2) in Component A in film being more than about 30.

4,211,824
BONDING RUBBER TO METAL

Shinichi Yoshida, Hamamatsu, Japan, assignor to Honny Chemicals Company, Ltd., Kobe, Japan

Division of Ser. No. 717,928, Aug. 26, 1976, Pat. No. 4,096,009. This application Mar. 21, 1978, Ser. No. 888,732
Claims priority, application Japan, Aug. 29, 1975, 50-104686
Int. Cl.[2] B32B *15/06, 15/08, 25/08;* **C25D** *3/38*
U.S. Cl. 428—462 **12 Claims**

1. A laminated article comprising a ferrous metal substrate having a tightly adherent deposit of copper thereon, a layer of adhesive over said copper and rubber bonded through said copper and adhesive to said ferrous metal substrate, said adhesive comprising an interpolymer containing about 50 to about 99% by weight of a conjugated diene, about 1–45% by weight of a heterocyclic nitrogen base and 0 to about 40% by weight of at least one additional copolymerizable monomer, the adhesion of the rubber to the metal having a bond strength of 40 to 90 kg/2 cm according to the H-test as defined in the above specification.

4,211,825
MULTILAYER COMPOSITE FILMS AND METHOD OF MANUFACTURE THEREOF

Gene H. Shipman, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 16, 1978, Ser. No. 951,597
Int. Cl.[2] B32B *27/06, 27/36*
U.S. Cl. 428—483 **13 Claims**

1. A multilayer composite film structure comprising

a support of polyester film;

a first layer on said support, said first layer comprising a polyolefin which is transparent to electromagnetic radiation in the wavelength range of about 1800 to 4000 angstroms and has a mass crystallinity of less than about 60% and a density less than about 0.94 g/cm^3; and wherein said support and said first layer have been placed in face-to-face contact with each other and heated and irradiated with said electromagnetic radiation to form a bond to each other which has an interfacial bond strength of at least about 90 grams per centimeter of width; and

a second layer on said first layer, said second layer comprising a polyolefin which is transparent to said electromag-

netic radiation and has a mass crystallinity of greater than about 60% and a density greater than about 0.94 g/cm^3; and wherein said first and second layers have been placed in face-to-face contact with each other and heated to form an interfacial bond to each other which is so strong that said layers cannot be mechanically separated from one another.

4,211,826

PRESSURE SENSITIVE TRANSFER MEDIA

Elbert Du, 417 E. 7th St., Cincinnati, Ohio 45201

Continuation of Ser. No. 781,117, Mar. 25, 1977, abandoned. This application Oct. 2, 1978, Ser. No. 947,632

Int. Cl.^{2} B32B *27/00*; B41M *3/12*

U.S. Cl. 428—497 **5 Claims**

1. A pressure sensitive image transfer medium formed of:

a planar flexible substrate film of synthetic resinous material and

a transfer layer comprising the solvent evaporated residue of an applied liquid dispersion adherently secured to one surface of said substrate film and from which localized portions are selectively and fully transferable to a copy surface in response to pressure application to the obverse surface of said substrate film

said layer consisting essentially of the uniformly dispersed intermixture of

about 9 to 20 parts of ethyl hydroxyl ethyl cellulose as a first resinous constituent thereof,

a substantially equal amount of a second resinous constituent that is incompatible with said first resinous constituent and selected from the group consisting of low to medium molecular weight methyl methacrylate and cellulose acetate butyrate,

about 30 to 55 parts of a mutually incompatible non drying vehicle modifier that is non-plasticizing with either said first or second resinous constituents selected from the group consisting of epoxidized soy bean oil and lard oil and

about 20 to 45 parts of image sensible material.

4,211,827

AL-SI-SN ALLOY CLAD COMPOSITE

Michael J. Pryor, Woodbridge; James M. Popplewell, Guilford, both of Conn., and William H. Anthony, Manchester, Mo., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 15, 1979, Ser. No. 20,800

Int. Cl.^{2} B32B *15/20*

U.S. Cl. 428—654 **10 Claims**

1. An aluminum composite having improved resistance to intergranular corrosion comprising an aluminum base alloy core clad with a brazing alloy consisting essentially of from 4–14% silicon, 0.01–2% tin, and the balance aluminum.

4,211,828

THERMOELECTRIC ENERGY SYSTEM

Robert L. Peck, Windham Center, Conn., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 9, 1978, Ser. No. 959,058

Int. Cl.^{2} H01M *6/36*

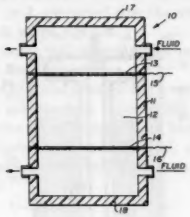
U.S. Cl. 429—11 **42 Claims**

1. A thermoelectric energy system comprising:

(a) at least first and second separated electrodes, said electrodes including copper;

(b) a liquid electrolyte comprising a source of copper ions and a material for complexing the ions, the complexing material being selected from the group consisting of one or a combination of a source of tartrate, a source of ethylenediaminetetraacetic acid, a source of gluconate, lactic acid, malic acid, citric acid, oxalic acid, and a source of silicon dioxide, the electrolyte being disposed between and in contact with the electrodes to provide a metal ion conduction path which extends substantially the entire distance between the electrodes;

(c) an electric circuit connected to the electrodes for removal of electrical energy from the system; and



(d) means for establishing a temperature gradient within said electrolyte whereby the average temperature of one of said electrodes will be greater than that of the other of said electrodes to thereby produce a voltage across the electrodes.

4,211,829

PROCESS FOR ASSEMBLING A POROUS MEMBRANE ON A SUPPORT AND ASSEMBLY PRODUCED IN THIS MANNER

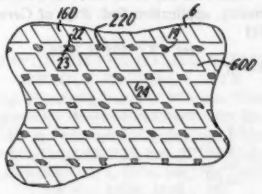
Alain Coulombeau, Le Cendre, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Apr. 18, 1978, Ser. No. 897,565

Claims priority, application France, Apr. 27, 1977, 77 13470; Mar. 31, 1978, 78 10010

Int. Cl.^{2} H01M *4/00, 12/06*

U.S. Cl. 429—27 **17 Claims**



1. Assembly comprising at least one support, at least part of the surface of which conducts electrons, and at least one electrically insulating membrane, said membrane having pores at least a part of which are open pores, characterized by the fact that it comprises an electrolytic deposit of at least one metal in a part of the open pores, said electrolytic deposit adhering to at least a part of the electron-conductive surface of the support, the assembled membrane being porous due to the presence of open pores without deposit.

4,211,830

AIR-DEPOLARIZED PRIMARY CELL

Robert Chevet, Poitiers, France, assignor to Saft Leclanche, Poitiers and Campagnie Industrielle des Piles Electriques "Cipel", Levallois-Perret, both of, France

Filed Jul. 17, 1979, Ser. No. 58,349

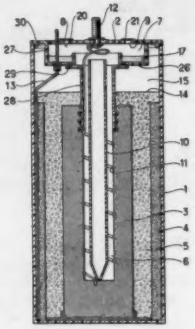
Claims priority, application France, Jul. 31, 1978, 78 22615

Int. Cl.^{2} H01M *4/00*

U.S. Cl. 429—27 **2 Claims**

1. An air-depolarized primary cell which includes: a container; a negative electrode disposed against the walls of the container; a positive electrode disposed in the central portion of the container together with a ventilation circuit in the posi-

tive electrode; a gelled electrolyte between the electrodes; and a gas-filled space above the electrolyte and the negative electrode; said space being delimited by the walls of the container, the ventilation circuit and a wall which is impermeable to oxygen, said wall being situated between the walls of the container and the ventilation circuit and partially covered with a layer of sealing material; the periphery of said impermeable wall including a rim having a step configuration and welded to the periphery of the walls of the container.



4,211,831

BATTERY VENT AND FILLER OPENING STRUCTURE

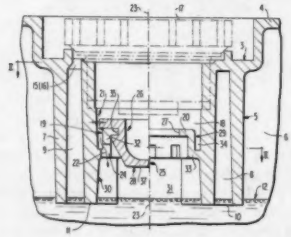
Werner Köhler, Stuttgart; Gerhard Drücker, Neuhausen; Ulrich Kiess, Esslingen, and Manfred Stotz, Aichwald, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,748

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1977, 2708531

Int. Cl.[2] H01M *2/36*

U.S. Cl. 429—78 **25 Claims**



1. A battery, comprising at least one cell means containing an electrolyte liquid, in which the cell means is connected with the atmosphere by way of a fill-in vent connection determining its liquid level and by way of a separate fill-in connection means for filling in electrolyte liquid and for refilling distilled water as well as by way of a control opening means for the insertion of a testing device for checking the operating condition, and in which the free flow cross section of the separate fill-in connection means is dimensioned so narrowly that a liquid seal closing off the fill-in connection means gas-tight will form under the influence of the capillary action and of the excess pressure which will be established during the filling operation of the cell means when the liquid has entered into the opening of the fill-in vent connection terminating in the cell means, and in which a control opening means disposed in an elastic wall is operable to be enlarged, characterized in that the control opening means is separate from the fill-in connection means and is adapted to be essentially closed when the testing device is not inserted therein.

4,211,832

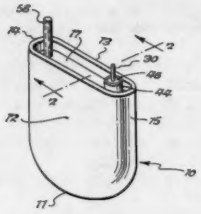
LITHIUM-HALOGEN CELL INCLUDING MONOMER CHARGE TRANSFER COMPLEX

Max A. Mueller, and Curtis F. Holmes, both of E. Amherst, N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,236

Int. Cl.[2] H01M *4/36, 6/18*

U.S. Cl. 429—105 **10 Claims**



1. A lithium-halogen cell comprising an anode comprising solid lithium, a solid electrolyte comprising lithium halide, and a cathode comprising a charge transfer complex of a monomer and a halogen, said monomer comprising an aromatic tertiary amine which forms a complex with said halogen.

4,211,833

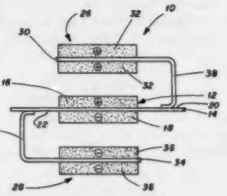
BIPOLAR BATTERY

Harry Einstein, Springfield, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 8, 1978, Ser. No. 967,625

Int. Cl.[2] H01M *6/48, 4/02*

U.S. Cl. 429—149 **23 Claims**



1. A bipolar battery comprising at least two battery, cells, said battery cells each comprising a plurality of electrodes, said electrodes comprising at least two cellular end plate electrodes and at least two interstitially located single pole electrodes, said end plate electrodes and said single pole electrodes each provided in equal numbers of opposite charge and situated in alternate disposition to each other based upon said charge.

a continuous, sheet-like separator located in alternating, woven disposition within each of said cells, said separator passing between all adjacent electrodes to provide electrical separation thereof,

wherein contiguous end plate electrodes of adjacent cells are of opposite polarity and comprise a single, bipolar electrode, and

wherein all of said electrodes are adapted to conduct current internally between each other and said cells.

4,211,834

METHOD OF USING A O-QUINONE DIAZIDE SENSITIZED PHENOL-FORMALDEHYDE RESIST AS A DEEP ULTRAVIOLET LIGHT EXPOSURE MASK

Constantino Lapadula, Mahopac, and Burn J. Lin, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1977, Ser. No. 866,191
Int. Cl.[2] G03C 5/16
U.S. Cl. 430—326 **21 Claims**

1. A photolithographic method, comprising the steps of:
forming a positive-acting relief image mask from o-quinone diazide sensitized phenol-formaldehyde resist material;
flooding said relief image mask with light having wavelength components below about 3000Å and possibly also having wavelength components above about 3000Å;
imaging transmitted light from said flooded relief image mask onto a layer of photosensitive resist material which is sensitive to actinic light below about 3000Å and, when said flooding light has components above about 3000Å, said imaged layer of photosensitive resist material being insensitive to said components above about 3000Å; and
removing with a preferential solvent the portions of said layer which have been exposed to said actinic light below about 3000A.

4,211,835

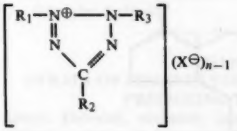
LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD OF PROCESSING THE SAME

Yoshio Nishina; Syunji Matsuo; Toshio Nagatani; Kazuo Takahashi, and Takeshi Habu, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

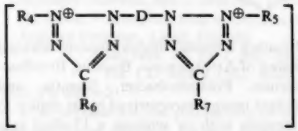
Filed Jan. 16, 1978, Ser. No. 869,609
Claims priority, application Japan, Jan. 27, 1977, 52-7274
Int. Cl.[2] G03C 5/30, 1/06
U.S. Cl. 430—403 **9 Claims**

1. A method of processing a light-sensitive silver halide black and white photographic material to obtain a high contrast black and white silver image, said material comprising a support, a silver halide emulsion layer containing silver halide grains having an average grain size between 0.25 and 0.5μ, at least 80% of said silver halide grains being of a grain size which falls within the range of 0.7 times said average grain size to 1.3 times said average grain size, said silver halide comprising (i) silver chlorobromide or silver chloroiodobromide, and (ii) at least 50 mol % silver chloride, and a tetrazolium compound selected from the group consisting of the compounds having the following general formulas I, II or III:

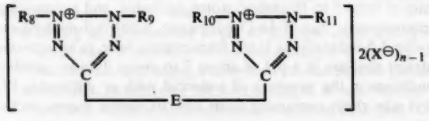
I



II



III



wherein R_1, R_3, R_4, R_5, R_8, R_9, R_{10} and R_{11} each represent an alkyl, alkenyl, aryl or heterocyclic group; R_2, R_6 and R_7 each represent allyl, phenyl, naphthyl, heterocyclic, alkyl or amino group, carboxyl or the salt thereof, an alkoxycarbonyl group, mercapto, nitro or hydrogen; D represents an arylene group; E represents an alkylene, arylene or aralkylene group; $X^{\ominus}$ is an anion; and n is 1 or 2, provided that the compound forms an intramolecular salt when n is 1,
comprising exposing said photographic material to an image and to light, and then
developing said exposed photographic material in a developing solution which does not contain hydroquinone selected from the group consisting of Metol, phenidone and Metol, p-aminophenol and catechol, and phenidone and p-aminophenol, to form said high contrast black and white silver image.

4,211,836

METHOD FOR DISPERSING OIL-SOLUBLE PHOTOGRAPHIC ADDITIVES

Masakazu Yoneyama; Yasuo Mukunoki; Takeshi Mikami, and Jun Sasaki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 18, 1979, Ser. No. 4,509
Claims priority, application Japan, Jan. 23, 1978, 53-6025
Int. Cl.[2] G03C 1/10, 1/40
U.S. Cl. 430—449 **12 Claims**

1. A method for dispersing an oil-soluble photographic additive into water or a hydrophilic colloid wherein a solution of an oil-soluble photographic additive in an organic solvent which is substantially immiscible in water and has a boiling point of at least 190° C. at atmospheric pressure is dispersed in water or a hydrophilic colloid in the presence of lecithin together with an anionic surface active agent having in its molecular structure a hydrophobic moiety containing from 8 to 30 carbon atoms and an $—SO_3M$ or $—OSO_3M$ group wherein M represents a cation capable of forming a salt with the sulfonic or sulfuric acid moiety.

4,211,837

PHOTOGRAPHIC SILVER HALIDE ELEMENT WITH OPAQUE BACKING LAYER

Ralph K. Blake, Westfield; James G. Morgan, Cranbury, both of N.J., and David W. Woodward, Kennett Sq., Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 506,725, Sep. 17, 1974, abandoned. This application Oct. 1, 1976, Ser. No. 728,736
Int. Cl.[2] G03C 1/76, 1/84
U.S. Cl. 430—502 **9 Claims**

1. In a photographic element comprising a support having on one side a photosensitive silver halide emulsion layer and on the other side an opaque backing layer containing a carbon black opacifying agent and a scavenging agent, the amount of scavenging agent being within the range of 0.01–50% by weight of the carbon black in the opaque backing layer, the improvement wherein said scavenging agent is a fine-grained photosensitive water-insoluble silver halide.

4,211,838

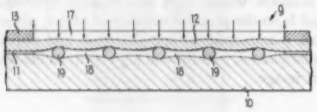
METHOD OF HIGH SENSITIVITY IMAGING AND IMAGING FILM THEREFOR

Masatsugu Izu, Birmingham, and Vincent D. Cannella, Detroit, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Aug. 25, 1977, Ser. No. 827,470
Int. Cl.[2] G03C 1/00, 5/24; G01D 15/24, 15/10
U.S. Cl. 430—502 **34 Claims**

1. A dry process high sensitivity imaging film comprising a substrate, and a solid, high optical density and substantially opaque film of a dispersion imaging material deposited on said substrate and including at least two separate and different metal layers of different and substantially mutually insoluble

metal components having relatively high melting points and relatively low melting point eutectics and interfaces between said layers having relatively low melting points, the metal component of one of said metal layers being at least bismuth, tin, lead, cadmium or zinc, and the metal component of another of said metal layers being different from that of said one of said metal layers and being at least bismuth, tin, lead, cadmium or zinc, said film of dispersion imaging material, upon application of energy in an amount above a certain critical value



sufficient to increase the absorbed energy in the film material above a certain critical temperature value related to the relatively low melting points of the interfaces, changing to a substantially fluid state in which the surface tension of the film material acts to cause the substantially opaque film, where subject to said energy, to disperse and change to a discontinuous film comprising openings and deformed material which are frozen in place following said application of energy and through which openings light can pass for decreasing the optical density thereat.

4,211,839

METHOD OF PRODUCING LIGHT-SENSITIVE COMPOSITION FOR USE IN THERMALLY DEVELOPABLE LIGHT-SENSITIVE ELEMENTS AND ELEMENTS SO PRODUCED

Nobuo Suzuki, Asaka; Kenji Sashihara, Minami-ashigara, and Takao Masuda, Asaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 791,447, Apr. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 724,197, Sep. 17, 1976, abandoned. This application Feb. 7, 1978, Ser. No. 875,727

Claims priority, application Japan, Sep. 17, 1975, 50-112452

Int. Cl.[2] G03C *1/02, 5/30*

U.S. Cl. 430—619 **12 Claims**

1. In a method of producing a composition for use in thermally developable light-sensitive photographic elements comprising mixing: (i) a composition comprising (a) an organic silver salt and (b) a light-sensitive silver halide and (ii) (c) a reducing agent which is present in an amount of from about 0.05 to about 10 mols per mol of said organic silver salt (a); the improvement wherein said composition comprising (a) and (b) is prepared by allowing a light-sensitive silver halide-yielding component present in an amount of from 0.001 to about 0.5 per mol of said organic silver salt (a) to react with said organic silver salt (a) in the presence of (d) an imino compound present in an amount of from about 1×10^{-6} to about 6×10^{-3} per mol of said organic silver salt (a) and being represented by the following general formula:

wherein R represents a hydrogen atom, a halogen atom a hydroxy group or a sulfonyl group; and Z represents the atoms necessary to complete a nucleus selected from the group consisting of pyrazoles, imidazoles, benzimidazoles, triazoles and benzotriazoles.

4,211,840

METHOD FOR PRODUCING D-α-AMINO ACID

Shigeru Nakamori, Yokohama; Kenzo Yokozeki, Kawasaki; Koji Mitsugi, Yokohama; Chikahiko Eguchi, and Hisao Iwagami, both of Kawasaki, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Apr. 17, 1978, Ser. No. 897,003

Claims priority, application Japan, Jun. 8, 1977, 52/67411; Oct. 3, 1977, 52/118928; Dec. 26, 1977, 52/157108

Int. Cl.[2] C12P *13/24, 13/04*

U.S. Cl. 435—107 **13 Claims**

1. A method for producing a D-α-amino acid, which comprises:

contacting a 5-substituted hydantoin with an effective amount of an enzyme capable of converting the 5-substituted hydantoin directly to the D-α-amino acid, produced by a microorganism belonging to the genus Pseudomonas, Achromobacter, Alcaligenes, Moraxella, Paracoccus or Anthrobacter, in an aqueous medium at a pH in the range from 4 to 9, said microorganism being capable of utilizing the D-isomer of said 5-substituted hydantoin as the sole nitrogen source, but substantially incapable of utilizing the L-isomer of said 5-substituted hydantoin as the nitrogen source and the substituent of said 5-position being such that upon reaction with said enzyme, an optically active D-α-amino acid isomer is produced; and

recovering the D-α-amino acid which accumulates in the aqueous medium.

4,211,841

PROCESS FOR MICROBIAL TRANSFORMATION OF STEROIDS

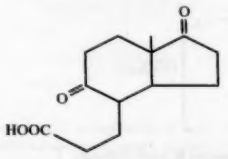
Candice B. Biggs, Kalamazoo; Thomas R. Pyke, Portage, and Merle G. Wovcha, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 831,492, Sep. 8, 1977, abandoned, which is a division of Ser. No. 745,113, Nov. 26, 1976, Pat. No. 4,062,729. This application Nov. 20, 1978, Ser. No. 961,964

Int. Cl.[2] C12P *7/40*

U.S. Cl. 435—136 **8 Claims**

1. A process for preparing a compound, of the formula



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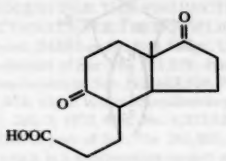
which comprises cultivating a mutant microorganism selected from the group consisting of Arthrobacter, Bacillus, Brevibacterium, Corynebacterium, Potaminobacter, Serratia, and Streptomyces, said mutant being characterized by its ability to selectively degrade steroids with or without a 17-alkyl side chain of from 2 to 10 carbon atoms, inclusive, and accumulate predominantly 3aα-H-4α-[3'-propionic acid]-7aβ-methylhexahydro-1,5-indanedione in the fermentation beer, in an aqueous nutrient medium at a pH of about 7 to about 9 under aerobic conditions in the presence of a steroid with or without a 17-alkyl side chain containing from 2 to 10 carbon atoms, inclusive.

5. A process for preparing a fermentation beer,



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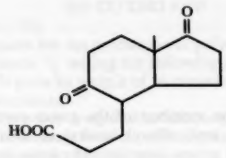
containing predominantly the compound of the formula



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which comprises cultivating a mutant microorganism selected from the group consisting of Arthrobacter, Bacillus, Brevibacterium, Corynebacterium, Protaminobacter, Serratia, and Streptomyces, said mutant being characterized by its ability to selectively degrade steroids with or without a 17-alkyl side chain of from 2 to 10 carbon atoms, inclusive, and accumulate predominantly 3aα-H-4α-[3'-propionic acid]-7aβ-methylhexahydro-1,5-indanedione in the fermentation beer, in an aqueous nutrient medium at a pH of about 7 to about 9 under aerobic conditions in the presence of a steroid with or without a 17-alkyl side chain containing from 2 to 10 carbon atoms, inclusive.

4,211,842

STARCH-DEGRADING BENZYMES DERIVED FROM *CLACOSPORIUM RESINAE*

James J. Marshall, Miami, Fla., assignor to Lifeline Products, Inc., Plainfield, N.J.

Filed Apr. 3, 1978, Ser. No. 892,747
Int. Cl.[2] C12D *13/10*
U.S. Cl. 435—210 **11 Claims**

1. A method of producing a mixture of starch-degrading enzymes which comprises:

culturing a microorganism, *Cladosporium resinae* (Strain ATCC No. 20495), on a growth medium containing an assimilable carbon source and other nutrients until starch-degrading enzymes accumulate in the medium;

and recovering the mixture of starch-degrading enzymes from the medium.

4,211,843

STRAIN OF MEASLES VIRUS AND PROCESS OF PRODUCING THE SAME

Robert Dubreuil, deceased, late of Montreal, Canada (by Monique Dubreuil, heir); Orvo Ast, Pierrefonds, and Vytautas Pavilanis, Westmount, both of Canada, assignors to L'Institut Armand-Frappier, Laval, Canada

Filed Nov. 30, 1977, Ser. No. 856,202
Int. Cl.[2] A01N *1/02*; A61K *39/12*
U.S. Cl. 435—2 **9 Claims**

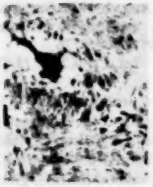
1. A process for the production of an attenuated strain of measles virus effective for the production of an attenuated measles virus vaccine, which comprises:

selecting an Edmonston strain of measles virus which has undergone a plurality of culture passages in various culture media, and taking a sample of the last culture passage;

effecting a plurality of culture passages of said sample in primary cultures of fibroblasts of chicken embryos;

inoculating a sample from the last culture passage and effecting a culture passage thereof in a primary culture of fibroblasts of chicken embryos thereby obtaining clones of said virus;

isolating clones of measles virus obtained in the preceding step, and selecting those which are thermosensitive at a temperature between about 32° C. and 37° C.;



among the thermosensitive clones which have been selected, making another selection of the ones with moderate cytopathogenic effect; and

finally isolating from the latest selection, the one which shows highest seroconversion on monkeys, thus producing an attenuated strain of measles virus.

4,211,844

BILIRUBIN-SPECIFIC FUNGAL ENZYME PREPARATION

Tai-Wing Wu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 19, 1978, Ser. No. 907,640
Int. Cl.[2] G01N *31/14*; C07G *7/028*
U.S. Cl. 435—25 **20 Claims**

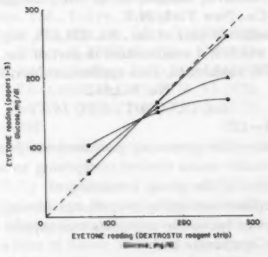
1. A bilirubin-specific enzyme preparation comprising a fungal enzyme which, in the presence of a bilirubin-containing aqueous liquid having a pH of about 7.4 and a temperature of about 37° C., degrades at least about 0.02 micromoles of bilirubin per minute per milligram of protein.

4,211,845

GLUCOSE INDICATOR AND METHOD

Marvin A. Genshaw, and William I. White, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 24, 1978, Ser. No. 963,332
Int. Cl.[2] G01N *33/16*
U.S. Cl. 435—14 **14 Claims**



1. A glucose indicator comprising glucose oxidase, a substance having peroxidase activity and a color-forming substance oxidizable by hydrogen peroxide in the presence of said peroxidase, said color-forming substance consisting of a mixture of 3,3',5,5',-tetramethylbenzidine and syringaldazine.

4,211,846
PROCESSES FOR THE MANUFACTURE OF D(-)-3-HYDROXYBUTYRIC ACID AND D(-)-3-HYDROXYBUTYRIC ACID PRODUCING MUTANTS

Robert M. Lafferty, Graz, Austria, assignor to Agroferm AG, Chur, Switzerland

Filed Aug. 4, 1977, Ser. No. 821,858

Claims priority, application Switzerland, Aug. 4, 1976, 9957/76; Aug. 5, 1976, 10010/76

Int. Cl.[2] C12D *13/02*

U.S. Cl. 435—141 **7 Claims**

1. A process for producing D(−)-3-hydroxybutyric acid which comprises cultivating a mutant microorganism on an aqueous nutrient medium containing trace elements, an assimilable nitrogen source and a carbon source selected from the group consisting of carbon dioxide, glucose, fructose, saccharose, lactose, molasses, whey, methanol, ethanol, glycerin and spent lye from caprolactam synthesis under conditions and for a time sufficient to produce said D(−)-3-hydroxybutyric acid and isolating said D(−)-3-hydroxybutyric acid from the medium, wherein said mutant microorganism does not form 3-hydroxybutyric acid dehydrogenase and produces at least 100 mg/liter of D(−)-3-hydroxybutyric acid when cultivated on said nutrient medium for 30 hours at a temperature between 25° and 40° C. and at a pH value between 4 and 8.

6. A process for producing a microorganism mutant capable of converting into D(−)-3-hydroxybutyric acid a maximum amount of a carbon source selected from the group consisting of carbon dioxide, glucose, fructose, saccharose, lactose, molasses, whey, methanol, ethanol, glycerin and spent lye from caprolactam synthesis within a minimum space of time, which comprises (1) subjecting a microorganism capable of excreting butyric acid or D(−)-3-hydroxybutyric acid, or of accumulating poly(D-3-hydroxybutyric acid), and which does not form the enzyme 3-hydroxybutyric acid dehydrogenase, to the action of a mutagenic agent, (2) selecting from the mutants thus obtained those which cannot metabolise D(−)-3-hydroxybutyric acid and (3) selecting from the thus obtained mutants those which are capable of producing at least 100 mg of D(−)-3-hydroxybutyric acid per liter of the nutrient medium within 30 hours when cultivated at a temperature of approximately 25°–40° C. and a pH value of approximately 4–8 in an aqueous nutrient medium which contains a carbon source as specified above.

4,211,847
POLYURETHANE FOAMS AND FOAM FORMING COMPOSITIONS CONTAINING AMINE SCAVENGERS

Clifton L. Kehr, Silver Spring; Louis L. Wood, Rockville, and James L. Guthrie, Ashton, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 831,628, Sep. 8, 1977, abandoned, which is a continuation-in-part of Ser. No. 728,464, Sep. 29, 1976, abandoned. This application Nov. 20, 1978, Ser. No. 962,542

Int. Cl.[2] C08G *18/14, 18/71*

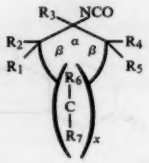
U.S. Cl. 521—121 **9 Claims**

1. A mixture for preparing polyurethane foams having a reduced aromatic amine content comprising an admixture of

(a) a member of the group consisting of

1. a urethane-containing prepolymer having polyether or polyester backbone segments end-capped with an aromatic isocyanate and
2. an aromatic polyisocyanate and a polyol selected from the group consisting of polyethers and polyesters;

(b) 0.01 to 15% by weight of said group member (a) of an aromatic amine scavenger selected from the group consisting of cyclohexyl monoisothiocyanate and a hindered cycloaliphatic monoisocyanate of the general formula:



wherein R_1–R_7 are members of the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl or mixtures thereof wherein the alkyl groups contain 1–18 carbon atoms, the cycloalkyl groups contain 4–8 carbon atoms and the aryl groups contain 6–14 carbon atoms with the proviso that where R_3 is a group member other than H, R_1, R_2, R_4 and R_5 can be H and with the further proviso that where R_3 is H at least two of R_1, R_2, R_4 and R_5 are group members other than H and x is 1 to 7; and

(c) about 0.4 to 1,000 moles of water for each mole of NCO.

7. A crosslinked hydrophilic foam having a three-dimensional network comprising the reaction product of

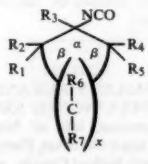
A. isocyanate capped prepolymers consisting of a mixture of

(1) an isocyanate capped hydrophilic polyoxyethylene diol, said diol having an ethylene oxide content of at least 40 mole percent; and

(2) an isocyanate capped polyol having a hydroxyl functionality in the range 3 to 8 prior to capping; said isocyanate capped polyol being present in an amount in the range 2.9 to 50% by weight of (1) and (2);

B. 0.5 to 10% by weight of A and B of an aromatic polyisocyanate having an isocyanate functionality in the range 2.0 to 3.0;

C. 0.01 to 15% by weight of A and B of an aromatic amine scavenger selected from the group consisting of cyclohexyl monoisothiocyanate and a hindered cycloaliphatic monoisocyanate of the general formula:



wherein R_1–R_7 are members of the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl or mixtures thereof wherein the alkyl groups contain 1–18 carbon atoms, the cycloalkyl groups contain 4–8 carbon atoms and the aryl groups contain 6–14 carbon atoms with the proviso that where R_3 is a group member other than H, R_1, R_2, R_4 and R_5 can be H and with the further proviso that where R_3 is H at least two of R_1, R_2, R_4 and R_5 are group members other than H and x is 1 to 7; and

D. 6.5 to 390 moles of water for each mole of unreacted isocyanate.

4,211,848

PROCESS FOR THE PRODUCTION OF POLYISOCYANATE-POLYESTER-SILICATE PLASTIC

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 911,829, Jun. 2, 1978, which is a continuation-in-part of Ser. No. 663,924, Mar. 4, 1976, Pat. No. 4,097,424, which is a continuation-in-part of Ser. No. 599,000, Jul. 7, 1975, Pat. No. 4,072,637, which is a continuation-in-part of Ser. No. 262,485, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 71,629, Sep. 11, 1970, abandoned. This application Jan. 26, 1979, Ser. No. 6,585

Int. Cl.[2] C08J *9/00*

U.S. Cl. 521—154 16 Claims

1. The process for the production of polyisocyanate-polyester silicate plastic by mixing the following components:

(a) 20 to 70 parts by weight of an organic polyisocyanate or polythiocyanate;

(b) 3 to 80 parts by weight of an unsaturated polyester resin;

(c) catalytic amount of a free-radical initiator to polymerize the unsaturated polyester resin;

(d) 0% to 100% by weight of an inorganic water-binding component, said water-binding component being capable of absorbing water to form a solid or a gel, and based on the total weight of components (a) and (b);

(e) 10% to 100% by weight of a polyisocyanate curing agent, based on the total weight of components (a), (b) and (d), but with the proviso that the polyisocyanate curing agent is added last.

4,211,849

PROCESS OF PRODUCING CROSS-LINKED URETHANE-GROUP COMPRISING FOAMS OF OPEN-CELL STRUCTURE

Hans-Joachim Kollmeier, Essen, and Gerd Rossmy, Essen-Werden, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Apr. 1, 1975, Ser. No. 564,052

Claims priority, application Switzerland, Apr. 8, 1974, 4894/74

Int. Cl.[2] C08G *18/32, 18/14*

U.S. Cl. 521—164 11 Claims

1. A process of producing cross-linked, resilient, urethane-group containing foams of open-cell structure which comprises foaming a mixture of

(a) di or trifunctional active hydrogen atom-comprising polyol of hydroxy equivalent weights of between about 700–5,000;

(b) a di or trifunctional polyisocyanate;

(c) a catalyst;

(d) a blowing agent; and

(e) a cross-linker, said cross-linker being sorbite, mannite, trimethylolmelamine, hexamethylolmelamine, glucose, sucrose, erythrite or partial esters or ethers of glucose or sucrose, and being used in quantities of 0.2 to 3.0 hydroxy equivalent weights calculated on one hydroxy equivalent weight of the polyol in the mixture.

4,211,850

POLYHYDROXY COMPOUNDS CONTAINING URETHANE ARYL SULFONIC ACID HYDROXYALKYL ESTER GROUPS

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 929,617, Jul. 31, 1978. This application Jun. 11, 1979, Ser. No. 47,510

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2735032

Int. Cl.[2] C08G *18/14*

U.S. Cl. 521—164 1 Claim

1. Polyurethanes obtained by a process comprising reacting:

(A) polyisocyanates; and

(B) compounds containing at least two hydroxyl groups and at least one sulfonic acid ester group and having an average molecular weight of from 300 to 12,000, wherein at least one of the hydroxyl containing compounds contains a urethane aryl sulfonic acid hydroxyalkyl ester group.

4,211,851

PROCESS FOR THE PREPARATION OF SELF-SWELLING LEAKAGE-PREVENTING MATERIALS

Hiroharu Sasayama, Ageo, Japan, assignor to C.I. Kasei Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 825,018, Aug. 16, 1977, Pat. No. 4,155,957. This application Nov. 30, 1978, Ser. No. 965,377

Claims priority, application Japan, Aug. 23, 1976, 51/100388

Int. Cl.[2] C08L *23/22, 23/26, 23/36, 35/00*

U.S. Cl. 525—108 5 Claims

1. A process for the preparation of a self-swelling leakage-preventing material comprising drying and heat-treating a liquid mixture composed of

(a) a copolymer of a lower olefin and maleic anhydride,

(b) 20-100 parts by weight as solid per 100 parts by weight of

(a) of an aqueous emulsion of an acrylic polymer having compatibility with the component (a) and containing at least one polymerized monomer selected from the group consisting of substituted and unsubstituted acrylic acids, acrylic acid esters, acrylamides, acrylonitriles and acrolein, and

(c) a compound having, in a molecule, at least two functional groups selected from the class consisting of a hydroxy group, amino group and epoxy group, until a crosslinked product having a swelling ratio in water of 5–40 times is obtained.

4,211,852

THERMOPLASTIC OLEFIN RESIN COMPOSITION AND LAMINATED FILM OR SHEET THEREOF

Akira Matsuda, Iwakuni; Tetsuo Tojo, Ohtake, and Kazuo Iwata, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 884,220, Mar. 7, 1978. This application Mar. 5, 1979, Ser. No. 17,803

Claims priority, application Japan, Sep. 26, 1977, 52-114690; Sep. 27, 1977, 52-115088; Jan. 13, 1978, 53-1876

Int. Cl.[2] C08L *23/12, 23/14, 23/18*

U.S. Cl. 525—240 5 Claims

1. A thermoplastic olefin resin composition composed of a blend of

(i) 5 to 95% by weight, based on the weight of the blend, of a random copolymer consisting essentially of 55 to 85 mole% of propylene and 45 to 15 mole% of 1-butene and having a heat of fusion of 10 to 80 joules/g determined by differential thermal analysis using a differential scanning calorimeter, and

(ii) 5 to 95% by weight, based on the weight of the blend, of an isotactic propylene resin containing 0 to 10 mole% of another α-olefin and having a melting point of 135° to 165° C. and a melt index, measured at 230° C., of 0.1 to 20.

4,211,853

FLAME RETARDANT HALOHYDROCARBON POLYMER COMPOSITION

Charles F. Raley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 765,142, Feb. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 168,756, Aug. 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 53,332, Jul. 8, 1970, abandoned. This application Jul. 31, 1978, Ser. No. 929,619

The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.

Int. Cl.[2] C08K *3/02*

U.S. Cl. 525—317 5 Claims

1. A halohydrocarbon polymer composition consisting essentially of (1) a halohydrocarbon polymer plasticized with from about 10 to about 250 weight parts of at least one polymerizable combustible monomer, said plasticized polymer being normally flammable, and (2) elemental red phosphorus having a specific gravity greater than two, said phosphorus being present in a flame retarding amount in the range from about 0.5 to about 20 weight parts, both of said weight parts being based on 100 weight parts of the halohydrocarbon polymer.

4,211,854

BLOCK POLYMERS OF POLY(TETRAMETHYLENE OXIDE) AND TETRAHYDROFURAN/ALKYLENE OXIDE COPOLYMERS

Ivan M. Robinson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 21, 1978, Ser. No. 935,508

Int. Cl.[2] C08L *37/00*

U.S. Cl. 525—410 15 Claims

1. A linear hydroxyl-terminated block polymer represented by the structure

A—B

or

A—B—A

where

the A block is a random copolymer of THF and one or more alkylene oxides containing two or three carbon atoms in its oxide ring, which block constitutes 5–95%, by weight, of the total polymer, and

the B block is poly(tetramethylene oxide), which block constitutes 5–95%, by weight of the total polymer, the polymer having a number average molecular weight of 500–20,000.

4,211,855

CATALYTIC DEHYDROHALOGENATION PROCESS FOR ALLYLICALLY HALOGENATED UNSATURATED HYDROCARBON POLYMERS

Irwin J. Gardner, Fanwood, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 775,389, Mar. 7, 1977, Pat. No. 4,145,492. This application Dec. 4, 1978, Ser. No. 966,396

Int. Cl.[2] C08F *8/26*

U.S. Cl. 525—344 17 Claims

1. A method for dehydrohalogenating an allylically halogenated unsaturated hydrocarbon polymer which comprises contacting said polymer in the liquid phase at a temperature of about 50° to 250° C. in the presence of a dehydrochlorination catalyst selected from the group consisting of $CuSO_4$ and activated alumina supported Ta_2O_5 and Nb_2O_5 catalyst compositions or a dehydrobomination catalyst selected from the group consisting of Ta_2O_5, Nb_2O_5, and $CuSO_4$ catalyst compositions.

4,211,856

PROCESS FOR PRODUCING ACID AGENT FROM SULFONATED PHENOL AND FORMALDEHYDE

Vasily D. Valgin, ulitsa Truda, 18, kv. 4; Alexandr M. Vasilenko, ulitsa Usti na Labe, 2, kv. 15, both of Vladimir; Anatoly Y. Morozov, ulitsa Geroev Pionerov, 11, kv. 6, and Vadim D. Chesnokov, ulitsa K. Marxa, 50, kv. 28, both of Rostovskaya oblast, Kamensk-Shakhtinsky, all of U.S.S.R.

Filed Jan. 5, 1978, Ser. No. 867,173

Int. Cl.[2] C08G *8/18*

U.S. Cl. 528—141 4 Claims

1. A process for producing an acid agent which comprises intermixing sulphonated phenol and formaldehyde in a ratio of from 1:0.3 to 1:0.5 and conducting the reaction at said constant reactant molar ratio in an "ideal displacement" apparatus at a temperature of from 50° to 120° C.

4,211,857

METHOD FOR PRODUCING POLYPHENYLENE OXIDES

Akitoshi Sugio, Ohmiya, and Takeo Kawaki, Tokyo, both of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,568

Claims priority, application Japan, Apr. 4, 1978, 53-39350

Int. Cl.[2] C08G *65/44*

U.S. Cl. 528—215 6 Claims

1. In the method for producing polyphenylene oxides from monohydric phenols by subjecting a monohydric phenol to an oxidation-polycondensation in a reaction vessel equipped with a reflux condenser, with an oxygen-containing gas in the presence of a complex catalyst comprising a copper compound and an amine, while passing said gas into the vessel,

an improvement which comprises adjusting the temperature of the oxygen-containing gas to be discharged through said reflux condenser within a range of 10°–25° C.

4,211,858

METHOD FOR PREPARING POLYESTER

Osamu Wada, and Naohiko Kusakari, both of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,608

Int. Cl.[2] C08G *63/18*

U.S. Cl. 528—272 10 Claims

1. In a method for preparing polyester by polycondensation reaction of polyester intermediate or precursor mainly composed of bis-(hydroxyalkyl)terephthalate or its oligomers continuously introducing said polyester intermediate or precursor into a polycondensation reaction vessel, an improvement in which the vapor of alkylene glycol is continuously blown into the gas phase in said polycondensation reaction vessel during said polycondensation reaction.

4,211,859

ANTISTATIC AGENTS, SYNTHESIS AND USE THEREOF

Sam K. Choi, CPO Box 150 Chung Ryang Ni, and Kee D. Lee, CPO Box 1780, both of Seoul, Rep. of Korea

Filed Nov. 2, 1978, Ser. No. 957,213

Claims priority, application Rep. of Korea, Nov. 16, 1977, 77-2682

Int. Cl.[2] C08G *63/20*

U.S. Cl. 528—275 3 Claims

1. An antistatic agent useful for the manufacture of an antistatic polyester fiber having the structural formula of:

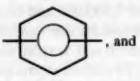
wherein

(1) X is selected from the group consisting of

(a) HO—,
(b) NH_2—,
(c) $OHSO_3$—, and
(d) Cl—, Br—, or I—;

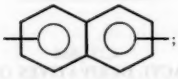
(2) X's, which can be either identical or different, are selected from the group consisting of
(a) —O—,
(b) —NH—, and
(c) $—SO_3—$;

(3) R's, which can be either identical or different, are selected from the group consisting of
(a) $—(CH_2)_n—$ where n is an integer ranging from 1 to 8,
(b) $—(HC{=}CH)_k—$ wherein k is either 1 or 2,
(c) —(C≡C)—,
(d)



, and

(e)



;

(4) R_1 is a polyalkylene glycol radical having the structural representation of

$$—[(CH_2)_m—O]_p—(CH_2)_m—OH$$

where p is a number ranging from about 10 to about 1,500 and m is either 2 or 3; and

(5) M is a divalent metal selected from the group consisting of Be, Mg, Ca, Sr, Ba, Zn and Cd.

4,211,860

THERMOSETTING IMIDE RESINS FROM DIHYDRAZIDE OF DICARBOXYLIC ACID

Horst Stenzenberger, Schriesheim, Fed. Rep. of Germany, assignor to Technochemie GmbH Verfahrenstechnik, Dossenheim, Fed. Rep. of Germany

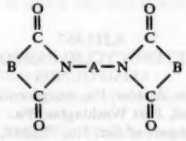
Filed Nov. 29, 1978, Ser. No. 964,665

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2754631

Int. Cl.[2] C08G *73/12*

U.S. Cl. 528—312 **17 Claims**

12. In a process of producing a thermosetting imide resin, the steps which comprises intimately mixing a finely divided N,N'-bisimide of an unsaturated dicarboxylic acid of the formula

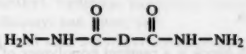


in which

A is a divalent organic group with at least two carbon atoms; and

B is a divalent group having a carbon to carbon double bond and being capable of addition polymerization

with a dihydrazide of a dicarboxylic acid of the formula



in which D is a divalent organic group

in a molar proportion between about 1.1 and about 10.0 and heating the resulting mixture to a temperature between about 70° C. and about 180° C. for a period of time to yield a moldable and curable, thermosetting prepolymerized imide resin.

4,211,861

THERMOSETTING IMIDE RESINS FROM AMINO ACID HYDRAZIDE

Horst Stenzenberger, Schriesheim, Fed. Rep. of Germany, assignor to Technochemie GmbH Verfahrenstechnik, Dossenheim, Fed. Rep. of Germany

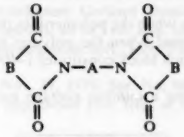
Filed Nov. 29, 1978, Ser. No. 964,664

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1977, 2754632

Int. Cl.[2] C08G *73/12*

U.S. Cl. 528—322 **15 Claims**

1. A thermosetting imide resin obtained by reacting at least one N,N'-bisimide of an unsaturated dicarboxylic acid of the formula

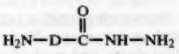


in which

A is a divalent organic group with at least two carbon atoms and

B is a divalent organic group having a carbon to carbon double bond and being capable of addition polymerization,

with at least one hydrazide of an amino acid of the formula



in which

D is a divalent organic group, the molar proportion of the reactants in said imide resin being between about 1.1 and 10.0 according to the equation

$$\frac{\text{Number of molecules of the N,N'-bisimide}}{\text{Number of molecules of the amino acid hydrazide}}$$

4,211,862

BLOCK POLYMERS OF HYDROQUINONE DI-(β-HYDROXYALKYL) ETHERS OR ISOMERS THEREOF AND TETRAHYDROFURAN/ALKYLENE OXIDE COPOLYMERS

Engelbert Pechhold, Chadds Ford, Pa., and Ivan M. Robinson, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 16, 1978, Ser. No. 951,387

Int. Cl.[2] C08L *37/00*

U.S. Cl. 528—405 **16 Claims**

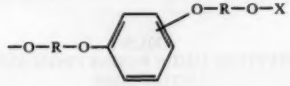
1. A linear hydroxyl-terminated block polymer represented by the structure

A—B

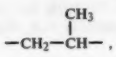
or

A—B—A

wherein the A block is a random copolymer of THF and one or more alkylene oxides containing two or three carbon atoms in its oxide ring, which block constitutes 60–99% of the weight of the total polymer, and the B block is represented by the structure



wherein R is $-CH_2CH_2-$,



or

and X is hydrogen when the polymer is in the A—B configuration, and not present when the polymer is in the A—B—A configuration, which block constitutes 1–40% of the weight of the total polymer,
the polymer having a number average molecular weight of 500–20,000.

4,211,863

POLYMER SLURRY CATALYST RESIDUE DEACTIVATION

Max P. McDaniel; John D. Hottovy, and Melvin B. Welch, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 17, 1979, Ser. No. 4,123
Int. Cl.[2] C08F *6/02*
U.S. Cl. 528—483 **7 Claims**

1. A method for deactivating catalyst residues of a transition metal compound and an organometallic compound contained in a polymer product slurry said method comprising (1) contacting said residue-containing slurry with anhydrous CO_2 in a transfer line downstream of the outlet of a polymerization reaction zone and (2) sufficiently reducing pressure on said polymer slurry to flash at least a portion of the liquid in said slurry thereby producing a zone of turbulence in conjunction with said contacting to cause an action of mixing said polymer slurry and anhydrous CO_2.

4,211,864

DAUNORUBICIN AND DOXORUBICIN LABELLED WITH ^{14}C AT THE 14-POSITION AND PROCESSES FOR THEIR PREPARATION

Gian P. Vicario, Novara; Sergio Penco, and Federico Arcamone, both of Milan, all of Italy, assignors to Societa Farmaceutici Italia (Farmitalia Carlo Erba S.p.A.), Milan, Italy

Filed Feb. 14, 1978, Ser. No. 877,755
Claims priority, application United Kingdom, Feb. 16, 1977, 06372/77
Int. Cl.[2] C07H *15/24*
U.S. Cl. 536—17 A **10 Claims**

1. A process for preparing [14-^{14}C]-daunorubicin which comprises reacting 9-desacetyl-9-formyl-N-trifluoroacetyl-daunorubicin dissolved in an inert aprotic organic solvent, with [^{14}C]-diazomethane to form a reaction mixture including [14-^{14}C]-N-trifluoroacetyl-daunorubicin separating the [14-^{14}C]-N-trifluoroacetyl-daunorubicin from said reaction mixture and treating same with an aqueous base to hydrolyze off the N-trifluoroacetyl protecting group and thereby obtain [14-^{14}C]-daunorubicin base.

4,211,865

NOVEL PROSTAGLANDIN PRECURSORS IN POLYMERIC FORM

Paolo Ferruti, V.le Cassiodoro, 24, and Rodolfo Paoletti, V.le Regina Margherita, 43, both of Milan, Italy

Filed Aug. 10, 1977, Ser. No. 823,500
Claims priority, application Italy, Aug. 10, 1976, 26172 A/76
Int. Cl.[2] C08B *31/02*
U.S. Cl. 536—48 **13 Claims**

1. A non-toxic polymer having a molecular weight of between about 5,000 and 1,500,000 and consisting essentially of a macromolecular polysaccharide matrix selected from the group consisting of starch and dextran esterified with a polyunsaturated acid having 20 carbon atoms selected from the group consisting of 8,11,14-eicosatrienoic acid, 5,8,11,14-eicosatetraenoic acid and 5,8,11,14,17-eicosapentenoic acid.

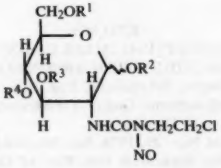
4,211,866

ACYL DERIVATIVES OF 2-[3-(2-CHLOROETHYL)-3-NITROSOUREIDO]-2-DEOXY-D-GLUCOPYRANOSE

Shingo Matsumura; Masakuni Ozaki; Hisao Watanabe; Hiroyuki Kuroda; Teruya Nakamura, and Akira Obayashi, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd. and Takara Shuzo Co., Ltd., both of, Japan

Filed Oct. 3, 1978, Ser. No. 948,169
Claims priority, application Japan, Oct. 3, 1977, 52/119270
Int. Cl.[2] C07H *5/06*
U.S. Cl. 536—53 **6 Claims**

1.



wherein R^1, R^2, R^3 and R^4 are the same or different and each is hydrogen or $-CO(C_nH_{2n})CH_3$ wherein n has a value of from 8 to 16, at least one of R^1, R^2, R^3 and R^4 being other than hydrogen.

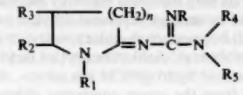
4,211,867

NITROGEN HETEROCYCLIC CARBOXIMIDAMIDE COMPOUNDS

Chris R. Rasmussen, Ambler, Pa., assignor to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Continuation-in-part of Ser. No. 752,588, Dec. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 668,386, Mar. 19, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,561
Int. Cl.[2] A61K *31/54*; C07D *417/12*
U.S. Cl. 544—60 **48 Claims**

1. A chemical compound selected from the group consisting of a guanidine derivative having the formula:



and the pharmaceutically acceptable acid addition and quaternary salts thereof, wherein:

n is the integer 1, 2 or 3;

R_1 is a member selected from the group consisting of hydrogen, alkyl having from 1 to 8 carbons, cycloalkyl having from 3 to 6 carbons, alken-2-yl having from 3 to 5 carbons, hydroxyloweralkyl, benzyl and phenyl;

R_2 is a member selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbons and phenyl;

R_3 is a member selected from the group consisting of hydrogen, alkyl having from 1 to 8 carbons and phenyl;

R_4 is a member selected from the group consisting of hydrogen, methyl and ethyl;

R_5 is a member selected from the group consisting of alkyl having from 1 to 4 carbons, cycloalkyl having from 3 to 7 carbons, benzyl, and phenyl and phenyl substituted with from 1 to 3 substituents each selected from the group consisting of halo, loweralkyl and loweralkoxy;

taken together represents a 3- to 7-membered saturated azacarbocyclic ring; provided that when $-NR_4R_5$ represents a six-membered ring, (i) said ring may, if desired, be interrupted by an oxygen or sulfur atom or by an additional nitrogen atom, which additional nitrogen atom may be substituted with loweralkyl, phenyl, or benzyl, or (ii) said ring may be substituted with loweralkyl,

at a carbon atom other than one immediately adjacent the nitrogen atom which is bonded to the carboximidamide function, selected from the group consisting of aziridinyl, azetidinyl, pyrrolidinyl, piperidino, 2,3,4,5,6,7-hexahydro-azepinyl, morpholino, thiamorpholino, thiamorpholino-1-oxide, thiamorpholino-1, 1-dioxide, 2, 6-diloweralkyl-morpholino 4-loweralkyl-piperazinyl, 4-phenyl-piperazinyl, 4-

R is a member selected from the group consisting of:

alkyl having from 4 to 10 carbons;

cycloalkyl having from 5 to 8 carbons;

bicycloalkyl having from 7 to 10 carbons;

bicycloalkenyl having from 7 to 10 carbons;

tricycloalkyl having from 9 to 10 carbons;

1-adamantylmethyl;

tricycloalkenyl having from 9 to 10 carbons;

arylalkyl in which the aryl function is a member selected from the group consisting of phenyl and naphthyl and the alkyl function has from 1 to 4 carbons;

α,A-tetramethylene-phenethyl;

diphenylalkyl in which the alkyl function has from 1 to 2 carbons;

naphthyl;

fused diarylcycloalkenyl;

fused arylcycloalkyl;

phenylcycloalkyl in which the cycloalkyl function has from 5 to 7 carbons;

cycloalkylcycloalkyl in which each cycloalkyl function has from 5 to 7 carbons;

phenyl; methylenedioxyphenyl; phenyl substituted with from 1 to 3 substituents each selected from the group consisting of halo, loweralkyl and loweralkoxy; and phenyl substituted with a member selected from the group consisting of amino, dimethylamino, methylethylamino, diethylamino, loweralkanoylamino, thioloweralkyl, sulfinylloweralkyl, sulfonylloweralkyl, trifluoromethyl, hydroxy, benzyloxy, loweralkanoyloxy, loweralkanoyl and nitro; and

3-Pyridyl, and said 3-pyridyl substituted at the ring carbons with 1 to 2 members selected from the group consisting of halo, loweralkyl, and loweralkoxy.

4,211,868

PROCESS FOR MAKING A FLUOROELASTOMER GELLING AGENT PREPARATION OF 1,3,5-TRIS-(3,3-DIFLUORO-2-PROPENYL)-S-TRIAZINE-2,4,6-(1H,3H,5H)-TRIONE

John P. Erdman, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1979, Ser. No. 42,947

Int. Cl.² C07D *251/34*

U.S. Cl. 544—221 **4 Claims**

1. A process for making hexafluorotriallylisocyanurate which comprises reacting 1,1-difluoro-1,3-dibromopropane with a compound selected from the group consisting of cyanuric acid and alkali metal salts thereof.

4,211,869

PROCESS FOR THE PREPARATION OF TETRACHLOROPYRIMIDINE

Gunther Beck, Leverkusen; Gerhard Dankert, Cologne, and Fritz Döring, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 964,049

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753204

Int. Cl.² C07D *239/30*

U.S. Cl. 544—334 **6 Claims**

1. Process for the preparation of tetrachloropyrimidine, characterised in that 2-cyanoethyl isocyanide dichloride is reacted with chlorine in the gas phase in the temperature range from 200°–650° C.

4,211,870

PREPARATION OF SUBSTITUTED 2-AMINOPYRAZINES

Charles J. Barnett, Indianapolis; Thomas L. Emmick, Greenfield, and Richard C. Hoying, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

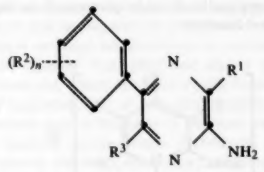
Filed Apr. 6, 1979, Ser. No. 27,630

Int. Cl.² C07D *241/20*

U.S. Cl. 544—336 **12 Claims**

1. A method for the preparation of 2-aminopyrazines of the formula

(I)



wherein

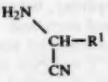
R^1 is hydrogen or C_1–C_4 alkyl;

R^2 is hydrogen, halo, C_1–C_3 alkyl, or trifluoromethyl;

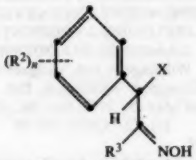
n is 0, 1, or 2, with the proviso that when n=2, only one ortho position may be substituted; and

R^3 is C_1–C_4 alkyl,

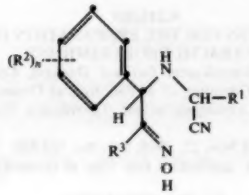
which comprises (A) reacting an aminoacetonitrile of the formula



wherein R^1 has the same value as set forth hereinbefore, with an α-chloro or α-bromo oxime of the formula



wherein X is chloro or bromo, and R^2, R^3, and n have the same values as set forth hereinbefore, in a solvent in the presence of an acid-uptake agent, to yield a hydroxyimino-substituted aminoacetonitrile of the following formula (II)



(II)

wherein R^1, R^2, R^3, and n have the same values as set forth hereinbefore; (B), separating the hydroxyimino-substituted aminoacetonitrile; and (C), heating the thus obtained hydroxyimino-substituted aminoacetonitrile in an acid selected from the group consisting of polyphosphoric acid, 85% phosphoric acid, and a mixture of phosphoric acid with phosphorus pentoxide, at a temperature of from about 50° to about 140° C., for from about ½ to about 4 hours, and isolating the product.

4,211,871

HEAVY METAL DERIVATIVES OF MERCAPTOPYRIDINE-1-OXIDE

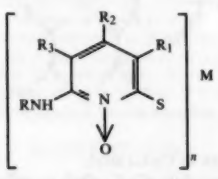
Miriam L. Douglass, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 791,613, Apr. 27, 1977, Pat. No. 4,122,084, which is a division of Ser. No. 629,436, Nov. 6, 1975, Pat. No. 4,048,181. This application Aug. 8, 1978, Ser. No. 932,065

Int. Cl.² C07D *213/89*

U.S. Cl. 546—6 **6 Claims**

1. A mercaptopyridine-1-oxide compound having the following structural formula:



wherein R is selected from the group consisting of the acyl radical $R_oC{=}O$ and the alkoxycarbonyl radical $R_oOC{=}O$, where R_O is a C_1–C_6 alkyl, aryl selected from the class consisting of phenyl, naphthyl, aralkyl where said alkyl portion has 1–6 carbons and halobenzyl; R_1, R_2 and R_3 are each independently selected from the group consisting of hydrogen, methyl, two of said terms may represent methoxy and the other hydrogen, one of said terms may represent ethyl, n-butyl, methoxy, ethoxy, phenyl, bromophenyl, chlorophenyl, trichlorophenyl, naphthyl, chlorobenzyl, dichlorobenzyl or furyl and the other two terms represent hydrogen; M is a mono-, di-, or trivalent metal selected from the group consisting of zinc, manganese, chromium, iron, copper, tungsten and nickel, and n is a whole number from 1 to 3.

4,211,872

SUBSTITUTED FUROPYRIDINONES AND FUROPYRAZINONES

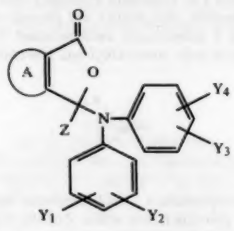
Paul J. Schmidt, 3590 Concerto Dr., Sharonville, Ohio 45241, and William M. Hung, 9176 Milleliff Dr., Cincinnati, Ohio 45231

Filed Dec. 11, 1978, Ser. No. 968,082

Int. Cl.² C07D *491/04*

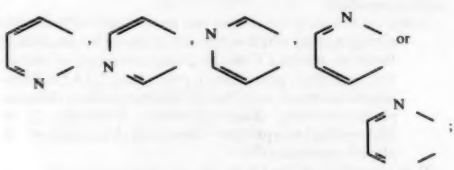
U.S. Cl. 546—116 **26 Claims**

1. A compound having the formula:



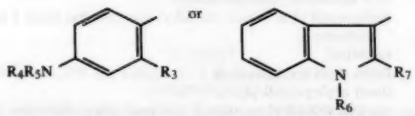
wherein

A is



Y_1, Y_2, Y_3 and Y_4 are the same or different and are selected from the group consisting of hydrogen, halo, lower alkoxy, alkyl having from 1 to 9 carbon atoms, phenyl-lower-alkyl and NR_1R_2 where R_1 is hydrogen or lower alkyl and R_2 is hydrogen, lower alkyl, lower alkanoyl, phenylsulfonyl or lower-alkyl-substituted phenylsulfonyl;

Z is



in which

R_3 is hydrogen, lower alkyl, lower alkoxy, halo or di-lower-alkylamino;

R_4 is lower alkyl;

R_5 is lower-alkyl or benzyl;

R_6 is hydrogen or non-tertiary alkyl having from 1 to 18 carbon atoms; and

R_7 is hydrogen, phenyl or non-tertiary lower alkyl.

4,211,873

PREPARATION OF CHLOROMETHYLPYRIDINES

R. Garth Pews, and Mezzie L. Ash, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 25, 1978, Ser. No. 927,718
Int. Cl.[2] C07D *213/26*
U.S. Cl. 546—346 7 Claims

1. A process for preparing 2- or 4-chloromethylpyridine comprising reacting by contacting a 2- or 4-methylpyridine-N-oxide with phosphoryl chloride in the presence of an organic base and an inert halogenated hydrocarbon solvent at a temperature between about 40° C. to about 80° C.

4,211,874

CONTINUOUS PROCESS FOR THE MANUFACTURE OF DINITROGLYCOLURILE

Jean-Marie L. Emeury, Sorgues, and Hubert H. Girardon, Villeneuve les Avignon, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Jun. 6, 1979, Ser. No. 46,190
Claims priority, application France, Jun. 23, 1978, 78 18785
Int. Cl.[2] C07D *487/04*
U.S. Cl. 548—304 4 Claims

1. Process for the manufacture of dinitroglycolurile by nitrating glycolurile with absolute nitric acid, characterised in that the nitration is carried out continuously and in a cascade, a homogeneous liquid phase being produced by simultaneously and continuously introducing glycolurile and absolute nitric acid into a first stirred reactor, and a heterogeneous phase then being produced in a second stirred reactor.

4,211,875

PREPARATION OF 4-METHYL-5-CHLOROMETHYL-IMIDAZOLE

Klaus Halbritter, Mannheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,248
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1978, 2800148
Int. Cl.[2] C07D *233/64*
U.S. Cl. 548—342 3 Claims

1. A process for the preparation of 4-methyl-5-chloromethylimidazole hydrochloride, wherein 4-methylimidazole, in aqueous solution, is reacted with formaldehyde or a formaldehyde oligomer in the presence of an excess of hydrogen chloride, at from 25° to 160° C.

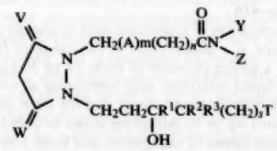
4,211,876

3-PYRAZOLIDINONE CARBOXAMIDES

Richard M. Scribner, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 13, 1979, Ser. No. 48,228
Int. Cl.[2] C07D *231/08*
U.S. Cl. 548—367 10 Claims

1. A compound of the formula



and salts with pharmaceutically acceptable acids where V or W is O and the other is H_2;

A is CH=CH, C≡C or phenylene;

m is o-1;

n is 1–5, with the proviso that when m=0;

n is 5 and when m is 1 and A is CH=CH or C≡C,

n is 1, 2 or 3;

Y and Z are either the same or different and are selected from the group consisting of H, and C_1–C_{12} straight-chain or branched-chain alkyl;

R^1 is H, CH_3, C_2H_5, CH=CH_2 or C≡CH;

R^2 is H, F, Or CH_3;

R^3 is H, F, or CH_3, with the proviso that when $R^1 \neq H$, R^2 and R^3 are H;

S is 3–6; and

T is H, CF_2CH_3 or CF_3.

4,211,877

METHOD OF PREPARATION OF ISOPROPYL 4,10-DIHYDRO-10-OXOTHIENO[3,2-c][1]BENZOXEPIN-8-ACETATE

Thomas B. K. Lee, Whitehouse Station, N.J., assignor to American Hoechst Corporation, Bridgewater, N.J.

Filed Feb. 13, 1979, Ser. No. 11,943
Int. Cl.[2] C07D *495/02*
U.S. Cl. 549—44 7 Claims

1. A method of synthesizing in situ isopropyl 4,10-dihydro-10-oxothieno[3,2-c][1]benzoxepin-8-acetate which comprises (a) halogenating 4-(2-carboxy-3-thienylmethoxy)-phenylacetic acid to form the diacid halide thereof; (b) treating said diacid halide with an aluminum halide to form a 4,10-dihydro-10-oxothieno[3,2-c][1]benzoxepin-8-acetylhalide; and (c) treating said acetylhalide with isopropyl alcohol to form the desired compound.

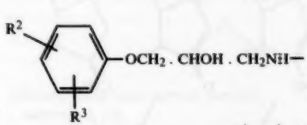
4,211,878

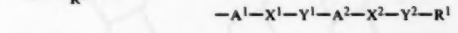
ALKANOLAMINE DERIVATIVES

Leslie H. Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 5, 1977, Ser. No. 839,568
Claims priority, application United Kingdom, Oct. 7, 1976, 41714/76
Int. Cl.[2] C07D *333/24, 307/12;* A01N *9/00, 9/28*
U.S. Cl. 549—78 8 Claims

1. An alkanolamine derivative selected from the group consisting of a compound of the formula:





wherein A^1 is alkylene of from 2 to 6 carbon atoms; wherein A^2 is a direct link or alkylene of up to 6 carbon atoms; wherein R^1 is thienyl or furyl unsubstituted or contains one or two substituents selected from alkyl and alkoxy each of up to 6 carbon atoms and, where the heterocyclic bears an appropriate degree of saturation, one or two oxo substituents; wherein R^2 and R^3, which may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro, carbamoyl, cyano or alkyl, alkenyl, alkoxy, alkylthio, alkenyloxy, alkanoyl or acrylamino each of up to 6 carbon atoms, or wherein R^2 and R^3 together form trimethylene, tetramethylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl or naphthyl; wherein X^1 and X^2, each is amidic of the formula —NHCO—; wherein Y^1 is a direct link and wherein Y^2 is a direct link, or alkylene, oxyalkylene or alkyleneoxy each of up to 6 carbon atoms, or oxygen; and the non-toxic pharmaceutically-acceptable acid-addition salts thereof.

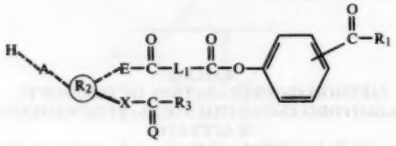
4,211,879

ESTERS OF PROSTACYCLIN-TYPE COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 933,329, Aug. 14, 1978. This application Jun. 14, 1979, Ser. No. 48,497
Int. Cl.[2] C07C 177/00
U.S. Cl. 560—53 **21 Claims**

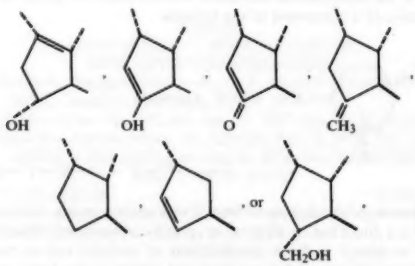
1. An acid ester of the formula



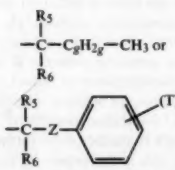
wherein A is (1) —O—(oxa) or, when E is $—CH_2—$, (2) $—CH_2—O—$ with $—CH_2$ bonded to (R_2),
wherein E is $—CH_2—$ or $—CH_2CH_2—$,
wherein L_1 is
(1) $—(CH_2)_n—$ wherein n is one to 5, inclusive,
(2) $—(CH_2)_p—CF_2—$ wherein p is 2, 3, or 4, or
(3) $—(CH_2)_v—CH=CH—$ wherein v is 1, 2, or 3,
wherein Q is

wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, wherein R_1 is alkyl of one to 4 carbon atoms, inclusive, with the proviso that when R_1 is tert-butyl the group

is in the 4-position,
wherein (R_4) is



wherein R_3 is



(1)

(2)

wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $—CR_5R_6—$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—);
wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between $CR_5R_6—$ and the phenyl ring;
wherein T is alkyl of one to 4 carbon atoms; inclusive, fluoro, chloro, trifluoromethyl, or $—OR_7—$ wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different, and
wherein X is
(1) trans-CH=CH—
(2) cis-CH=CH—
(3) —C≡C— or
(4) $—CH_2CH_2—$.

4,211,880

RESIN-METAL COMPOUND COMPLEX

Werner O. Haag, Lawrenceville, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 858,228, Dec. 7, 1977, Pat. No. 4,145,486, which is a continuation of Ser. No. 501,429, Aug. 29, 1974, Pat. No. 4,111,856, which is a continuation of Ser. No. 306,782, Nov. 15, 1972, Pat. No. 3,857,392, which is a continuation-in-part of Ser. No. 860,807, Sep. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 672,010, Oct. 2, 1967, abandoned. This application Dec. 4, 1978, Ser. No. 965,829
Int. Cl.[2] C07C 67/05; B01J 31/12
U.S. Cl. 560—243 **5 Claims**

1. A process for manufacturing vinyl acetate which comprises reacting ethylene and oxygen in the presence of liquid acetic acid at a temperature up to 250° C. and in the presence of an insoluble resin-metal coordinative complex compound comprising an insoluble weak base exchange resin having amine, phosphine, arsine, stibine, thiol or sulfide Lewis base substituents, coordinatively, nonionically bonded through said substituents to a metal atom of palladium, said metal atom having chemically bonded thereto at least one ligand and said complex containing on a weight basis 0.01 to 50% of metal, 39 to 99% of resin with the sum of the amount of the ligand and metal not exceeding 61%.

4,211,881

PREPARATION OF PHTHALIC ACID BY SINGLE STEP CONTINUOUS AIR OXIDATION OF LIQUID ORTHO-XYLENE

Sydney G. Horsfield, Wheaton; George E. Kuhlmann, and Alan G. Bemis, both of Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 17, 1978, Ser. No. 961,763
Int. Cl.[2] C07C 51/33
U.S. Cl. 562—416 **6 Claims**

1. The preparation of o-phthalic acid by the air oxidation of liquid o-xylene at a temperature in the range of from 205° to 225° C. and a gauge pressure of from 28 to 30 kg/cm^2 in the presence of liquid ophthalic acid containing as solutes from 2 to 21 weight percent liquid water and for each gram mole of o-xylene from 1 up to 10 milligram atoms of cobalt, from 2 up to 20 milligram atoms of manganese and from 3 up to 40 milligram atoms of bromine derived from hydrogen bromide or elemental bromine as components of catalysis; the continuous operation comprising introducing into said liquid o-phthalic acid solution in a stirred oxidation zone in addition to air, o-xylene and said components of catalysis continuously and simultaneously in the relationship such that the air to xylene ratio provides at least 1.0 volume percent oxygen in the spent

air portion of the exhaust from said zone and the ratio of components of catalysis to o-xylene are the 1 to 10 milligram atoms of cobalt, 2 to 20 milligram atoms of manganese and 3 up to 40 milligram atoms of bromine, the continuous and simultaneous introduction of from 5 up to 20 grams of acetic acid or benzoic acid per gram mole of o-xylene.

4,211,882

PROCESS FOR PRODUCING TEREPHTHALIC ACID

Makoto Komatsu; Tazuo Ohta; Toru Tanaka, and Kimiko Akagi, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 825,480, Aug. 17, 1977, abandoned, which is a continuation of Ser. No. 655,637, Feb. 5, 1976, abandoned. This application Feb. 23, 1979, Ser. No. 14,597

Claims priority, application Japan, Feb. 10, 1975, 50-17072; Feb. 10, 1975, 50-17073

Int. Cl.² C07C *51/33*

U.S. Cl. 562—416 **25 Claims**

1. A process for producing terephthalic acid, which comprises oxidizing p-tolualdehyde with a gas containing molecular oxygen in a liquid phase using a lower monocarboxylic acid as a solvent and at a temperature in the range of from 120° C. to 260° C. and a pressure in the range of from 0.5 to 50 kg/cm² gauge in the presence of a catalyst consisting of (1) a manganese compound, (2) a cobalt compound, (3) a bromine compound selected from the group consisting of hydrobromic acid, ammonium bromide, sodium bromide, potassium bromide, cesium bromide, magnesium bromide, barium bromide, tetraalkylammonium bromide, tetrabromoethane and tetrabromoparaxylene, and (4) at least one compound selected from the group consisting of chromium compounds, iron compounds, nickel compounds and compounds of metallic elements belonging to the lanthanide series; said at least one compound of component (4) of the catalyst being present in an amount such that the atomic ratio of chromium atoms, iron atoms or nickel atoms to manganese atoms of said manganese compound is from 0.7 to 30.0, or of the metallic element atoms of the lanthanide series to manganese atoms of said manganese compound is from 0.02 to 10.0.

4,211,883

PROCESS FOR THE PRODUCTION OF P-(N-METHYL)-AMINOBENZOYL-L-GLUTAMIC ACID

Enrico Catalucci, Arona, Italy, assignor to Lonza, Ltd., Gampel, Switzerland

Filed Jul. 19, 1978, Ser. No. 926,007

Claims priority, application Switzerland, Aug. 12, 1977, 9877/77

Int. Cl.² C07C *101/44*

U.S. Cl. 562—433 **4 Claims**

1. The process for the production of p-(N-methyl)-aminobenzoyl-L-glutamic acid which comprises:

(a) introducing a formyl group into p-(N-methyl) aminobenzoic acid by boiling the p-(N-methyl)-aminobenzoic acid in HCOOH, as a reaction medium, under reflux, whereby p-(N-methyl-N-formyl)-aminobenzoic acid in formed;

(b) chlorinating the p-(N-methyl-N-formyl)-aminobenzoic acid with a chlorinating agent, which is sulfonyl chloride or thionyl chloride, at 40° to 80° C., whereby p-(N-methyl-N-formyl)-aminobenzoic acid chloride is formed;

(c) reacting the p-(N-methyl-N-formyl)-aminobenzoic acid with L-glutamic acid in the presence of a base as an acid acceptor, whereby p-(N-methyl-N-formyl)-amino benzoyl-L-glutamic acid is formed; and

(d) converting the p-(N-methyl-N-formyl)-amino benzoyl-L-glutamic acid into p-(N-methyl)-amino benzoyl-L-glutamic acid by alkaline hydrolysis in a 2.5 to 3.5 normal caustic soda solution at 30° to 70° C.

4,211,884

2-DECARBOXY-2-HYDROXYMETHYL-3,7-INTER-m PHENYLENE-13,14-DIDEHYDRO-PGF COMPOUNDS

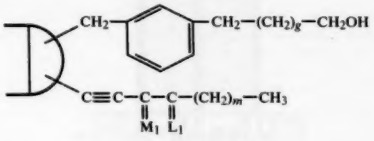
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 814,500, Jul. 11, 1977, Pat. No. 4,134,921, which is a division of Ser. No. 708,752, Jul. 26, 1976, Pat. No. 4,058,564. This application Feb. 24, 1978, Ser. No. 880,739

Int. Cl.² C07C *35/21*

U.S. Cl. 568—807 **60 Claims**

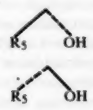
1. A prostaglandin analog of the formula



wherein D is

or

wherein R_8 is hydrogen or hydroxy;
wherein M_1 is



or

wherein R_5 is hydrogen or methyl;
wherein L_1 is

or a mixture of

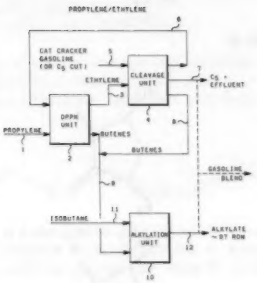
and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein g is one, 2, or 3; and
wherein m is one to 5, inclusive.

4,211,885
HIGH OCTANE GASOLINE COMPONENTS FROM CATALYTIC CRACKING GASOLINE, PROPYLENE, AND ISOBUTANE BY DISPROPORTIONATION, CLEAVAGE AND ALKYLATION

Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 15, 1979, Ser. No. 39,405
Int. Cl.[2] C07C *3/62, 3/50*
U.S. Cl. 585—316 2 Claims

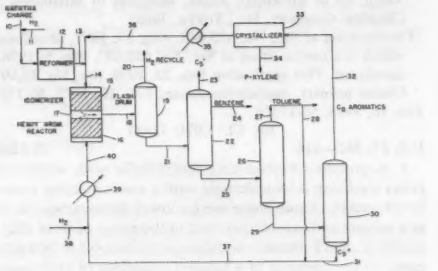


1. A process for producing high octane value gasoline which comprises in a disproportionation zone subjecting propylene and a mixture of propylene and ethylene obtained as hereinafter delineated to disproportionation conditions to produce a stream containing ethylene and a stream containing butenes, passing the ethylene-containing stream from said disproportionation zone together with a catalytic cracking gasoline to a cleavage zone under disproportionation conditions and subjecting the mixture of hydrocarbons therein to cleavage to produce said mixture of propylene and ethylene, a C_5^+ gasoline-containing product and butenes and wherein the butenes obtained in the overall operation of the disproportionation zone and the cleavage zone are passed to an alkylation zone wherein said butenes are used to alkylate an isoparaffin to produce additional high octane value product.

4,211,886
MANUFACTURE OF BENZENE, TOLUENE AND XYLENE

Samuel A. Tabak, Wenonah, and Roger A. Morrison, West Deptford, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,279
The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.
Int. Cl.[2] C07C *3/62, 5/30*
U.S. Cl. 585—321 37 Claims



1. A new use of known apparatus for simultaneously isomerizing xylenes and converting ethylbenzene to products readily separable by distillation from the mixture of C_8 aromatics by contacting a mixture of C_8 aromatics and hydrogen with a catalyst at conversion conditions of elevated temperature and pressure in a loop comprising an isomerization reactor for the contact aforesaid, distillation means for separating C_8 aromatics from lower boiling and higher boiling hydrocarbons, means to transfer hydrocarbon effluent of said isomerization reactor to said distillation means, means for introducing fresh feed C_8 aromatics to said loop, a xylene separator for recovery of para xylene, means for transfer of mixed C_8 aromatics to said xylene separator, and means to transfer C_8 aromatics lean in para xylene from said xylene separator to said isomerization reactor, which new use comprises contacting, in the isomerization reactor of said known apparatus, a vapor phase mixture of hydrogen, said C_8 aromatics lean in para xylene and fresh charge material containing alkyl benzenes of more than eight carbon atoms with a zeolite catalyst at a temperature of about 800°–1000° F., a pressure of 150 to 300 pounds per square inch and a weight hourly space velocity between 1 and about 200; said zeolite catalyst having a constraint index of 1 to 12, a silica to alumina ratio greater than 12 and a reduced activity such that less than 2 weight percent of xylene is converted to other compounds when contacted with said catalyst at 900° F., 200 psig and LHSV of 5, mixing said hydrocarbons higher boiling than C_8 aromatics with hydrogen, contacting the mixture of hydrogen and said higher boiling hydrocarbons with a porous acidic solid catalyst at a temperature of 550° to 1000° F. and transferring the product of said contacting with a porous acidic solid catalyst to said distillation means.

ELECTRICAL

4,211,887

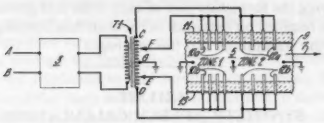
ELECTRICAL FURNACE, ZONES BALANCED WITH A SYMMETRICALLY TAPPED TRANSFORMER

Michael Williamson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 25, 1978, Ser. No. 954,492

Int. Cl.[2] C03B *5/02*; H05B *3/60*

U.S. Cl. 13—6 **17 Claims**



1. A furnace having a plurality of zones for melting and heating of material, said zones each having at least a pair of electrodes for creating a respective current path therebetween, said electrodes in each said zone being supplied by a common transformer secondary and wherein each of said electrode paths of said zones are symmetrically tapped from said transformer secondary with respect to each other.

4,211,888

ARRANGEMENT WITH SEVERAL THERMAL ELEMENTS IN SERIES CONNECTION

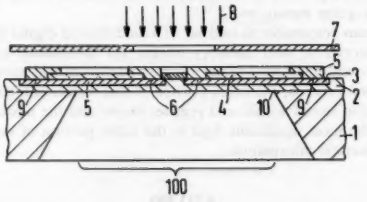
Karl-Ulrich Stein, Munich; Heiner Herbst, Haar, and Dietrich Widmann, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,827

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2733071

Int. Cl.[2] H01L *35/28*

U.S. Cl. 136—225 **12 Claims**



1. Thermal element arrangement having several thermal elements in series connection, in which an insulation layer having thereupon several metal conductor paths is situated on a semiconductor substrate, in which each thermal element has one of said metal conductor paths as a first leg, a semiconductor region as a second leg and, as a thermal contact, a metal semiconductor contact of said metal conductor paths with the respective semiconductor region, said semiconductor substrate being less than 10 μm thick in that region where said thermal contacts are to be heated during operation of said arrangement, and is more than 200 μm thick in that region in which are situated the contacts which are to be kept cold during operation of the arrangment, said semiconductor substrate having thereon an epitaxial semiconductor layer which is less doped vis-a-vis said substrate and which adjoins the surface of said substrate.

4,211,889

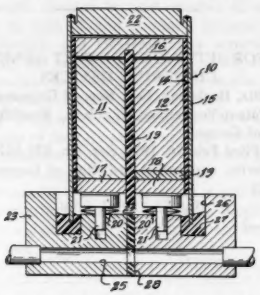
THERMOELECTRIC MODULE

William E. Kortier; John J. Mueller, and Philip E. Eggers, all of Columbus, Ohio, assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Sep. 16, 1968, Ser. No. 761,894

Int. Cl.[2] H01V *1/15*

U.S. Cl. 136—237 **1 Claim**



1. A thermoelectric module comprising an n-type lead telluride thermoelectric element doped with iodine and excess lead; a p-type lead telluride thermoelectric element doped with sodium and excess tellurium; a mica partition separating said n- and p-type thermoelectric elements; a tungsten hot strap abutting the hot ends of said thermoelectric elements; a hot platen mounted above the upper surface of said tungsten hot strap; an iron shoe metallurgically bonded to the cold end of each thermoelectric element with a barrier layer of tin telluride separating said p-type thermoelectric element from said iron shoe; a mica sleeve snuggly fitted against and surrounding said thermoelectric elements, iron shoes and tungsten hot strap; a copper cold sink situated adjacent to said iron shoes and containing a cavity; spring means disposed within said cavity so as to force said thermoelectric elements against said tungsten hot strap; an electrical insulating partition extending entirely through and electrically dividing said copper cold sink; and a hermetically sealed stainless steel casing compressively secured against said mica sleeve and encasing said thermoelectric elements in a gas-free environment, the top of said casing being welded to said hot platen and the bottom of said casing being embedded in an epoxy resin disposed within a rectangular well situated in said copper cold sink.

4,211,890

ELECTRONIC CIRCUIT BOARDS

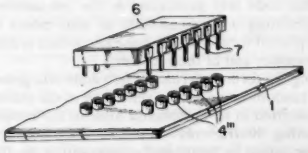
Ryoichi Sado, Saitama, and Koichi Nei, Tokyo, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed May 17, 1978, Ser. No. 906,742

Claims priority, application Japan, May 25, 1977, 52-67413[U]

Int. Cl.[2] H05K *1/08*

U.S. Cl. 174—68.5 **1 Claim**



1. An electronic circuit board comprising an insulating

sheet-like base having flexibility, a printed circuit including at least one terminal contact point on one of its surfaces and an elastomer pad secured to the other surface of said base, said pad including a plurality of protrusions made of an elastic material and affixed to said base at areas in correspondence with said terminal contact point, each of said protrusions being in the form of a ring, said base being provided with a corresponding plurality of holes at positions corresponding to the void cores of said plurality of ring-shaped protrusions.

4,211,891

METHOD FOR SETTING CODE TEXT GENERATORS IN CIPHERING DEVICES

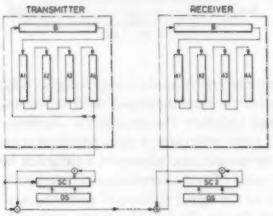
Ekkehard Glitz, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,442

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1977, 2706421

Int. Cl.[2] H04L *9/04*

U.S. Cl. 375—2 **8 Claims**



1. In a method for enciphering and deciphering the transmission of data between a transmitter including a code text generator and at least one receiver including a code text generator in which clear text data are linked with key data at the transmitting end and are recovered at the receiving end by linkage with identical key data and in which the same basic key is present in a stored state at the transmitter and at the receiver, each code text generator including a plurality of code text forming registers, the improvement comprising, before the transmission of data:

randomly jumbling, in the code text generator at the transmitter, with a fixed or a randomly changing formation rule, at least one code text forming register over a minimum period of time, with a nonperiodic continuous clock pulse which is different from the transmission clock pulse until a random bit sequence of elements has been generated in the code text forming registers;

retaining such random bit sequence to define the prime data for the code text generators at the transmitter and at the receiver;

transmitting such random bit sequence from the transmitter to the receiver while cyclically shifting the code text forming registers at the transmitter so that after said transmitting, the code text generators at the transmitter and at the receiver have the same prime data,

said step of transmitting including transmitting an identifying word indicating start of transmission of the prime data of the code text generators in the transmitter and then transmitting a representation of that prime data in an enciphered form with the basic key which is defined at the transmitter and at the receiver;

deriving the formation rule of each code text generator from the random bit sequence generated at the transmitter and transmitted in an enciphered form to the receiver,

and during the transmission of data effecting repeated synchronization by temporarily interrupting the flow of data and performing, during such interruption, the steps of:

retaining the bit sequence in the code text forming registers of the transmitter at the moment of interruption to define new prime data for the code text generator of each receiver connected to receive such data transmission; or to check the synchronization of such receivers which have synchronized any time before, marking the bit sequence retained at the transmitter at the moment of interruption by an identifying marker, transmitting this bit sequence in enciphered form by means of a basic key information which is identical at the transmitter and the receiver; and

deriving the formation rule of each code text generator from the retained bit sequence of the code text forming registers at the transmitter and the receiver.

4,211,892

SYNTHETIC-SPEECH CALCULATORS

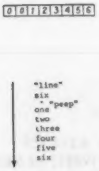
Akira Tanimoto, Kashihara; Sigeaki Masuzawa, Nara; Shinya Shibata, Nara, and Shinzo Nishizaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 15, 1978, Ser. No. 877,883

Claims priority, application Japan, Feb. 15, 1977, 52/17798[U]; Feb. 21, 1977, 52/19660; Feb. 25, 1977, 52/20493

Int. Cl.[2] G10L *1/00*; G06F *3/16*

U.S. Cl. 179—1 SM **10 Claims**



1. A synthetic-speech calculator of the law-of-exponent type including means for entering numerical information, said numerical information including a mantissa portion and an index portion comprising:

register means for storing said mantissa portion and said index portion of the entered numerical information;

memory means for storing a set of sound related digital signals representative of said mantissa portion and said index portion of said numerical information stored in said register means; and

means responsive to said set of sound related digital signals stored in said memory means for producing audible sounds indicative of the mantissa portion of said numerical information, the index portion of said numerical information stored within said register means and the position of the most significant digit in the index portion of said numerical information.

4,211,893

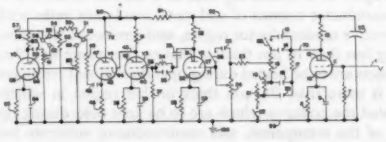
DUAL MODE MUSIC INSTRUMENT AMPLIFIER

Randall C. Smith, Lagunitas, Calif., assignor to Mesa Engineering, Inc., Lagunitas, Calif.

Filed Nov. 13, 1978, Ser. No. 959,705

Int. Cl.[2] G10H *1/06*

U.S. Cl. 179—1 A **12 Claims**



1. An electronic amplifier for audio frequency electrical signals generated by a musical instrument such as a guitar

including a plurality of preamplifier stages operating in substantially the linear mode and providing a high amplitude signal output from the final pre-amplifier stage,

a further amplifier stage comprising an electron discharge device having an anode, a cathode and a control electrode,

a first adjustable attenuation network,

a second adjustable attenuation network,

a pre-amplifier signal output terminal,

switch means for selectively coupling the output of the final pre-amplifier stage to the pre-amplifier signal output terminal through the first network to provide a signal having a preset amplitude to said terminal or coupling the final pre-amplifier stage to the control electrode to drive it into its non-linear saturated operating mode to provide a distorted signal at its anode electrode,

and said switch means including means operating to couple the output from said anode electrode to the pre-amplifier signal output terminal through said second network concurrently with the coupling of the control electrode to the output of said final pre-amplifier stage.

4,211,894

TRANSMITTER MULTIPLEXING SYSTEM FOR A LAND MOBILE COMMUNICATION SYSTEM

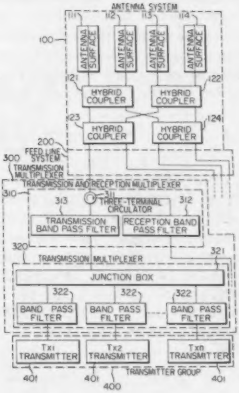
Kunio Watanabe, and Heiichi Yamamoto, both of Yokosuka, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Oct. 4, 1978, Ser. No. 948,544

Claims priority, application Japan, Oct. 14, 1977, 52-122469

Int. Cl.² H04Q 7/04

U.S. Cl. 179—2 EB **10 Claims**



1. A transmitter multiplexing system for a land mobile communication system comprising

(a) an antenna system with a plurality of input terminals wherein the input signal from one of said input terminals is radiated to space, and is impedance mismatched with respect to the remaining input terminals and wherein the radiation characteristics as viewed from any of said input terminals are all the same;

(b) a transmitter group comprising a plurality of common antenna transmission multiplexers connected through a feed line system to said input terminals, respectively, of said antenna system, each of said common antenna transmission multiplexers comprising

a plurality of bandpass filters and a common interconnecting unit connected to said bandpass filters,

the pass band of each of said bandpass filters being equal to or greater than a value equal to the base station transmission bandwidth of said land mobile communication system divided by the product of

(i) the number of said common antenna transmission multiplexers and (ii) the number of said bandpass filters in each of said transmission multiplexers, the frequency separation interval between the bandpass filters closest to each other in pass band frequency in each of said common antenna transmission multiplexers being equal to or smaller than a value equal to said transmission bandwidth divided by said number of said bandpass filters in each of said common antenna transmission multiplexers, and the frequency separation interval between the bandpass filters in the adjacent transmission multiplexers being equal to or smaller than the pass band of each of said bandpass filters,

whereby when all of said bandpass filters are arrayed in the order of their frequencies or pass bands, any point in said transmission bandwidth is within the pass band of at least one bandpass filter; and

(c) said transmitter group including a plurality of multichannel transmitters are each capable of operating on any channels assigned to any corresponding bandpass filter in each of said transmission multiplexers.

4,211,895

ELECTRONIC TELEPHONE SYSTEM WITH TIME DIVISION MULTIPLEXED SIGNALLING

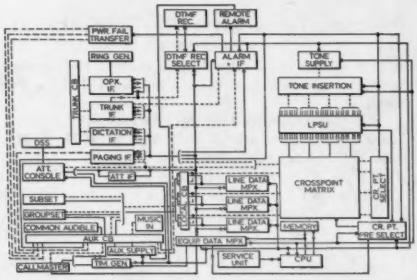
John C. H. Davis, Oak Ridges; Krishnaswamy Natarajan, Bramalea; Jan Cihal, Toronto; Motek Szpindel, Downsview, and Jeffrey Sidwell, Thornhill, all of Canada, assignors to Plessey Canada Ltd., Downsview, Canada

Filed Dec. 5, 1977, Ser. No. 857,744

Claims priority, application United Kingdom, Dec. 10, 1976, 51673/76

Int. Cl.² H04Q 1/30, 3/56

U.S. Cl. 179—18 J **28 Claims**



1. An electronic telephone system having a plurality of terminal units which are connected radially to a central equipment by respective cables each including at least one conductor pair providing a transmission path for system signalling, said conductor pairs being connected to a common control unit at the central equipment, the common control unit including:

a timing generator for generating address signals and timing signals,

multiplexing means controlled by the timing generator in accordance with the generation of said address signals for placing the units sequentially in communication with the common control unit for exchanging information therewith, said terminal units being scanned in cyclic sequence, each unit being allotted a unique time slot within the scanning cycle, and

means responsive to timing signals from the timing generator for controlling the transmission of digital data over said system signalling paths, said means dividing each of said allotted time slots into distinct periods in which data is transmitted unidirectionally from the terminal unit to the common control unit and in which data is transmitted

from the common control unit to the terminal unit, respectively,

said conductor pairs being connected to transmit both system signals and d.c. power for consumption at the terminal units, and each said conductor pair being a balanced pair terminated by a matching impedance at the respective terminal unit.

24. In an electronic telephone system including a solidstate crosspoint matrix operable by a central control for selectively interconnecting calling and called parties in accordance with system signalling conditions, the system serving at least one trunk having tip and ring leads constituting a trunk pair, the system further including a trunk interface connected to the cross-point matrix by a conductor pair providing a speech transmission path and to the central control by conductors used for system signalling, the trunk interface comprising:

a first resistance hybrid network providing a first pair of network terminals connected to said tip and ring leads, and second and third pairs of network terminals, the network providing a matching impedance terminating the trunk pair,

a second resistance hybrid network having a first pair of network terminals connected to the conductors of said conductor pair, and second and third pairs of network terminals, the second resistance hybrid network providing a matching impedance terminating said conductor pair,

the second pair of network terminals of each resistance hybrid network being connected to the third pair of network terminals of the other network by respective circuits each providing a unidirectional path for speech transmission,

said circuits including control means responsive to trunk signalling connected to the central control, said control means including respective switching means responsive to incoming and outgoing call signals for rendering the circuits operable and inoperable in accordance with calling conditions.

4,211,896

SUBSCRIBER'S CIRCUIT WITH A SYMMETRICAL AMPLIFIER

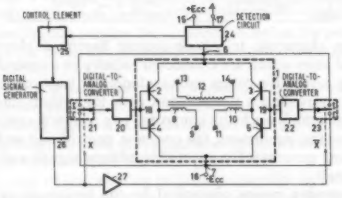
Gilbert M. M. Ferrieu, Bievres, France, assignor to Telecommunications Radioelectrique et Telephoniques T.R.T., Paris, France

Filed Oct. 10, 1978, Ser. No. 949,715

Claims priority, application France, Oct. 17, 1977, 77 31145; Dec. 20, 1977, 77 38404; Jan. 19, 1978, 78 01461

Int. Cl.[2] H04M *3/22*

U.S. Cl. 179—18 FA **8 Claims**



1. A subscriber's circuit for connecting a subscriber's line to a telephone exchange, comprising a symmetrical amplifier circuit arranged between two feed points having different potentials, the amplifier circuit having two input terminals and two output terminals, each one of the output terminals being connected to a wire of the subscriber's line, separate digital-to-analog converters having outputs connected to each input terminal of the symmetrical amplifier circuit, separate changeover switches connecting an input of each digital-to-analog converter to the one or to the other feed point, the changeover switches being controlled in phase opposition by a binary digital signal which characterizes a voltage desired for the subscriber's line, and a digital signal generator under the control of the telephone exchange providing said binary digital signal.

4,211,897

MULTIFREQUENCY SIGNAL RECEIVING SYSTEM

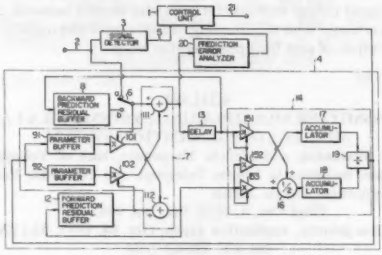
Akira Ichikawa, Kokubunji; Kazuo Nakata, Kodaira, and Kazuhito Hirose, Kamikuratamachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 15, 1978, Ser. No. 942,557

Claims priority, application Japan, Sep. 16, 1977, 52/110590; Jun. 14, 1978, 53/70905

Int. Cl.[2] H04M *1/50*; G01R *23/02*

U.S. Cl. 179—84 VF **12 Claims**



1. A multifrequency signal receiving system comprising means for extracting from a received signal a plurality of prediction coefficients the number of which is determined depending on the character of the received signal, and means responsive to the output of said extracting means for identifying the received signal by detecting frequencies included in the received signal.

4,211,898

HEADPHONE WITH TWO RESONANT PEAKS FOR SIMULATING LOUDSPEAKER REPRODUCTION

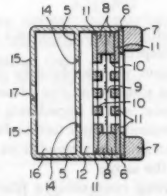
Nobuhisa Atoji; Takashi Matsumoto; Shoichi Kusumoto; Kazue Sato, and Mitsuhiro Hasegawa, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 10, 1978, Ser. No. 923,206

Claims priority, application Japan, Jul. 11, 1977, 52/83325; Jul. 11, 1977, 52/83326; Jul. 11, 1977, 52/83327

Int. Cl.[2] H04M *1/05*; H04R *1/28*

U.S. Cl. 179—156 R **4 Claims**



1. A headphone comprising:

a headphone case having a plurality of perforations provided through the front surface thereof;

a diaphragm rearwardly spaced from said perforations;

means for causing said diaphragm to vibrate in response to an electrical signal to generate acoustic waves in opposite directions;

said headphone case having a cavity rearwardly of said diaphragm to provide an acoustic compliance to the acoustic waves propagating in the rearward direction, and an aperture through the rear surface thereof for providing an acoustic mass reactance to coact with the acoustic compliance of said cavity to produce two resonant peaks in a frequency range from 1 kHz to 10 kHz; and

means for producing a phase advance in the vicinity of 1 kHz of said acoustic waves.

4,211,899

CIRCUIT ARRANGEMENT FOR AN INDIRECTLY CONTROLLED EXCHANGE, IN PARTICULAR A TELEPHONE EXCHANGE

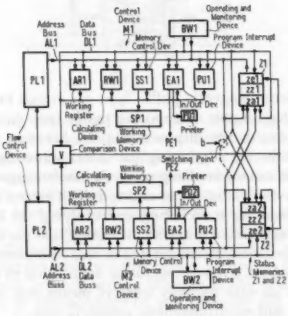
Edmund Ptacnik, Soecking, and Carl Trainer, Argelsried, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,290

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1977, 2733921

Int. Cl.[2] H04Q *1/22*

U.S. Cl. 179—175.2 C **11 Claims**



1. A circuit arrangement for an indirectly-controlled exchange, in particular a telephone exchange, which is provided with central control devices and in which, upon the occurrence of a fault signal, the operating status of the exchange is temporarily maintained and items of data concerning the electrical states prevailing at test points are input into a memory in order to retain the currently prevailing operating states, comprising

first and second parallel-operating control devices, said control devices including

first and second working memories, respectively,

first and second data buses, respectively,

first and second status memories, respectively, each including an input connected to its respective data bus and an output connected to the opposite respective data bus,

at least one fault device operable to supply fault signals connected to each of said data buses,

first and second terminals for receiving control signals connected to said data buses,

transfer means operable in response to a control signal which follows a fault signal to transfer the test data stored in said status memories into said working memories,

first and second output devices, and

comparison means for comparing the test data of the two control devices and feeding the test data and the comparison results to said output device.

4,211,900

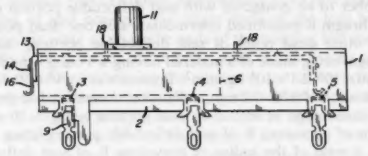
SLIDE SWITCH WITH SHORTING CONTACT

Thomas J. Quigley, Farmville, Va., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Dec. 7, 1978, Ser. No. 967,169

Int. Cl.[2] H01H *15/02, 9/00*

U.S. Cl. 200—5 R **4 Claims**



1. A slide switch comprising an elongated case formed from a housing provided in one side with a longitudinal slot and also provided with an insulating base member, two parallel rows of fixed electric contacts inside the case spaced apart lengthwise of said base member and rigidly mounted thereon, there being three contacts in each row, an insulating slider inside the case provided with an actuating button extending through said slot for moving the slider back and forth lenthwise of the base member, a pair of bridging contacts movable by the slider along said rows of fixed contacts from a position in which each bridging contact bridges the adjoining middle fixed contact and one of the end fixed contacts in the same row to a position bridging the same middle contact and the other end contact in the same row, and shorting contact means in the case extending lengthwise of said housing between the housing and slider, said shorting contact means being longer than the slider and having a pair of abutments spaced lengthwise of the case, one of the abutments being engageable by the slider when it is moved in one direction, the other abutment being engageable by the slider when it is moved in the opposite direction, and the distance between said abutments being such that after the slider has been moved toward one end of the case a predetermined distance the slider will push one of said abutments in the same direction far enough to pull said shorting contact means into engagement with the two fixed contacts at the opposite end of the case when said bridging contacts engage the other two end contacts.

4,211,901

PRESSURE SENSING SWITCH WITH CONDUCTIVE DEFLECTABLE DIAPHRAGM

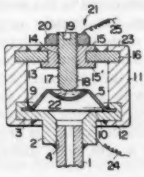
Akira Matsuda, Higashimurayama; Norio Goshima, Musashino; Shigeo Yasuda, Musashino, and Motoaki Iwasaki, Musashino, all of Japan, assignors to Bridgestone Tire Company Limited and Mitaka Instrument Company Limited, both of Tokyo, Japan

Filed Dec. 21, 1978, Ser. No. 972,059

Claims priority, application Japan, Dec. 29, 1977, 52-177386[U]

Int. Cl.[2] H01H *35/34*

U.S. Cl. 200—83 B **2 Claims**



1. A pressure sensing switch comprising; a diaphragm hav-

ing a ring-shaped peripheral portion, a frustoconical side wall portion being continuous to a radially inner edge of said peripheral portion and extending upward therefrom, and a deflectable portion constituting a portion of sphere and being continuous to a radially inner edge of said side wall portion and deflectable between one dead point and the other dead point in response to a pressure change within a predetermined pressure range; and a movable contact member positioned to face said diaphragm in such a way that a contact point of said contact member to be contacted with said deflectable portion of said diaphragm is positioned intermediate said one dead point and said other dead point of said deflectable portion; said diaphragm being made of a material having a Young's modulus E of 1.0×10^4–2.1×10^4 kg/mm^2, Poisson's ratio V of 0.3 and a thickness t of 0.02–0.2 mm, a diameter d measured at the radially inner edge of said side wall portion being 5–10 mm, a radius of curvature R of said deflectable portion being 18–44 mm, a ratio of the radius of curvature R of said deflectable portion to the diameter d measured at the radially inner edge of said side wall portion being 2.5–5, and a maximum deflection Dmax as expressed by a general formula of

$$Dmax = (3.1 \times 10^{-3} - 6.2 \times 10^{-5}) \times \frac{Pd^4}{16Et^3}$$

where P is a pressure (kg/cm^2) acting on said diaphragm, being 0.2–0.4 mm.

4,211,902

APPARATUS FOR PHASE SWITCHING IN PUMPING-UP POWER STATION

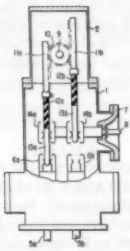
Hiroaki Tsuchida, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 20, 1977, Ser. No. 789,435

Claims priority, application Japan, Apr. 27, 1976, 51-48034

Int. Cl.[2] H01H *33/54*

U.S. Cl. 200—148 R **6 Claims**



1. An apparatus for phase switching between a pumping-up operation and a generating operation in a pumping-up power station, the improvement comprising:

a sealed casing filled with an insulating gas;

a pair of disconnecting switches having a stationary contact and a movable contact, the disconnecting switches being integrally accommodated in the sealed casing;

an actuating means for linearly actuating the movable contacts so as to cause reverse movement with respect to each other such that only one selected movable contact at any time contacts the stationary contact of the switch associated therewith to prevent shorting; said pair of disconnecting switches being connected in a configuration whereby one movable contact is opened while the other movable contact is still open during actuation thereof; and,

means for connecting the movable contacts; said means for connecting the movable contacts being a pair of intermediate contacts, integrally accommodated in the sealed casing, for establishing electrical connection between said pair of disconnecting switches and associated apparatus in said apparatus for phase switching, said pair of intermediate contacts being in sliding contact with each of the movable contacts.

4,211,903

ELECTROMAGNETIC PUFFER TYPE GAS CIRCUIT BREAKER

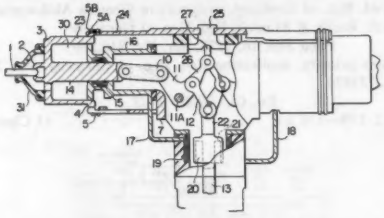
Masanori Tsukushi, Hitachi; Katsuichi Kashimura, Takahagi; Osamu Koyanagi, Hitachi; Yoshio Yoshioka, Hitachi, and Kunio Hirasawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 9, 1977, Ser. No. 805,173

Claims priority, application Japan, Jun. 21, 1976, 51-72182

Int. Cl.[2] H01H *33/88*

U.S. Cl. 200—148 D **7 Claims**



1. An electromagnetic puffer type gas circuit breaker comprising at least a pair of opposing puffer type circuit breaker units, support means disposed midway between said circuit breaking units for supporting the same, actuating means for driving said circuit breaking units, an electromagnetic actuating unit drivingly coupled to said actuating means, and current transfer means for transferring and applying the interrupting current to said electromagnetic actuating unit during a circuit breaking operation, characterized in that said current transfer means is located, in direct operative connection to said actuating means, on said midway support means and in a spaced relation to said electromagnetic actuating unit.

4,211,904

GAS-BLAST CIRCUIT BREAKER

Herbert Karrenbauer, Niestetal, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 27, 1978, Ser. No. 881,719

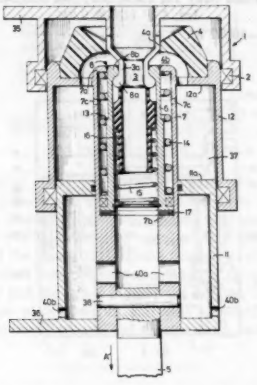
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1977, 2708546

Int. Cl.[2] H01H *33/70*

U.S. Cl. 200—148 A **21 Claims**

1. In a gas-blast circuit breaker including a stationary power contact, a movable power contact cooperating with the stationary power contact to assume an engaged or a disengaged state therewith; a stationary piston having a workface; a cylinder slidably arranged on the piston and defining, together with the workface of the piston, a compression chamber for compressing an arc extinguishing gas therein upon relative movement of the piston into the cylinder; an insulating nozzle affixed to one end of the cylinder and having a nozzle opening oriented towards the stationary power contact where an electric arc is generated between the stationary and movable power contacts during displacement of the movable power contact away from the stationary power contact, said nozzle opening communicating with the compression chamber; and a drive rod operatively connected to the cylinder and the movable power contact for displacing the cylinder with respect to the piston and for displacing the movable power contact with

respect to the stationary power contact; the improvement comprising a guide sleeve fixedly attached to said cylinder and being surrounded thereby; said movable power contact being slidably received in said guide sleeve for displacement with respect to said guide sleeve and said drive rod; a compression spring means for urging said movable power contact into said guide sleeve away from said stationary power contact; means for arming said compression spring means during an initial phase of the displacement of said cylinder and said guide sleeve away from said stationary power contact by said drive rod; locking means for maintaining said movable power contact immobilized and in engagement with said stationary power



contact during said initial phase; and unlocking means for disengaging said movable power contact from said stationary power contact at the end of said initial phase for releasing the potential energy of said compression spring means, whereby said movable power contact is accelerated into said guide sleeve away from said stationary power contact; and further wherein the cross-sectional outline of said movable power contact is substantially identical to the outline of said nozzle opening, whereby said movable power contact is surrounded by said nozzle opening with a close fit in the course of said initial phase of displacement of said cylinder and said guide sleeve away from said stationary power contact by said drive rod.

4,211,905

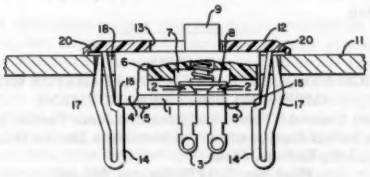
SLIDE SWITCH ASSEMBLY FOR MOUNTING IN A PANEL

Thomas J. Quigley, Farmville, Va., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Feb. 14, 1979, Ser. No. 12,160

Int. Cl.[2] H01H 9/00

U.S. Cl. 200—295 **3 Claims**



1. A slide switch assembly for mounting in a panel having a rectangular opening therein for receiving the assembly, comprising a rectangular slide switch housing having a top wall provided with a longitudinal slot therein and also provided with integral tabs projecting lengthwise from the opposite ends of said wall centrally thereof, a contact-actuating slide in said housing, and a button projecting from the slide out through said slot and movable lengthwise of the slot for moving said slide back and forth in combination with a switch holder for mounting said switch in a panel opening, said holder comprising a face plate overlying the top wall of the switch in engagement therewith and projecting laterally from the sides and ends of said housing, said plate being provided with a longitudinal slot through which said button extends, and a pair of laterally spaced resilient legs extending downwardly from said plate at each end of said housing, the upper ends of the legs being joined to the plate close to the ends of the housing but spaced inwardly from the ends of the plate, each leg having an intermediate shoulder underlying the adjoining end of the housing in engagement therewith for holding the switch against the plate, and a spring prong joined to the lower end of each leg and extending upwardly therefrom spaced outwardly from the leg and having a free upper end portion for pressing laterally against an end of said panel opening when said switch and legs and prongs are pressed down into that opening with said plate overlapping the panel around said opening, and said housing tabs extending out between said laterally spaced legs far enough to overlie the panel when the switch is inserted in the panel opening, whereby the tabs will be clamped between said face plate and the panel.

4,211,906

ROTARY ACTUATING DEVICE FOR LOW-VOLTAGE CIRCUIT BREAKERS WITH TOGGLE LEVER

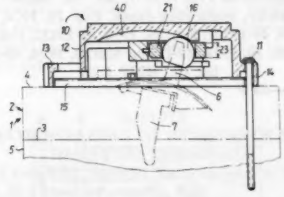
Klaus-Dieter Habedank, and Werner Troebel, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 4, 1979, Ser. No. 27,159

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2815129

Int. Cl.[2] H01H 3/20, 3/00

U.S. Cl. 200—330 **5 Claims**



1. An actuating device for attachment to a low-voltage circuit breaker having an insulating housing and a toggle lever protruding therefrom, comprising:

a housing,

a guide mechanism, actuable by rotary motion, for translating the rotary motion into rectilinear motion, and

a spherical head piece having an opening for receiving the end of the toggle lever,

said guide mechanism having fork arms and a slider guided therein for motion relative to the axis of rotation which contains a receiving opening for the end of the toggle lever.

4,211,907

SETTING MECHANISM WITH DETENT STEPS FOR TRIPPING DEVICES OF ELECTRICAL SWITCH GEAR

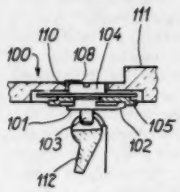
Werner Troebel, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,558

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2805181

Int. Cl.[2] H01H *9/20, 37/22*

U.S. Cl. 200—318 **7 Claims**



1. A setting mechanism with detent stops for use in a tripping device of a low voltage circuit breaker having a housing of insulating material comprising:

an outer setting member which is accessible from outside the breaker, and

an inner setting member connected to the outer setting member by means of an interrupted snap-in ring to form a shaft for supporting both members in a bearing part,

the inner setting member carrying an essentially radially extending detent arm which is resilient perpendicular to its longitudinal axis in the direction of the upper part of the bearing part, and

the outer setting member having a radially resilient post which is undercut with sharp corners for engaging the ring and a second post having an approximately radial protrusion for engaging a corresponding recess in the inner setting member.

4,211,908

APPARATUS FOR HIGH FREQUENCY DISCHARGE SHAPING OF A WORKPIECE BY MEANS OF A RECTANGULAR BIPOLAR PULSATING VOLTAGE

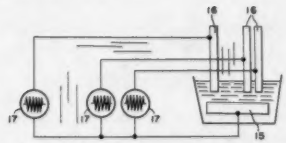
Yoshiei Niwa, Yokohama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 548,019, Feb. 7, 1975, abandoned. This application Feb. 7, 1977, Ser. No. 766,347

Claims priority, application Japan, Feb. 19, 1974, 49-19130; Feb. 19, 1974, 49-19131; Feb. 19, 1974, 49-19132; Feb. 19, 1974, 49-19133; Feb. 19, 1974, 49-19134; Mar. 6, 1974, 49-25309

Int. Cl.[2] B23P *1/08*

U.S. Cl. 219—69 P **2 Claims**



2. In a high frequency discharge shaping apparatus having an electrode and means for spacedly mounting said electrode and a workpiece to form a discharge gap therebetween,

a power supply including a plurality of transformer coil means, a plurality of sources of rectangular bipolar pulsating current signals, said plurality of sources respectively coupled to said plurality of transformer coil means, and a power accumulating coil electromagnetically coupled to said plurality of transformer coil means for accumulating the electrical power thereof and for supplying output power of a single phase; and

a coupling ring positioned around but spaced from said electrode and coupled to said power supply for capacitively supplying power to said electrode.

4,211,909

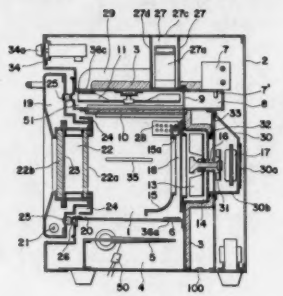
COMBINATION MICROWAVE AND GAS OVEN

Nagatoshi Yoshida, Moriguchi, and Yoshihito Taga, Tottori, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of, Japan

Filed May 15, 1978, Ser. No. 906,245

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 R **18 Claims**



1. A combination microwave and gas oven which comprises:

an outer casing, a heating cavity defined by walls within said outer casing, means for supplying microwave energy into said heating cavity, a combustion chamber positioned adjacent to said heating cavity within said outer casing, a door means adapted to selectively open and close an opening defined at one side of said heating cavity, a gas burner positioned within said combustion chamber for supplying heated air to said heating cavity, a circulation fan positioned within a housing and communicating with said heating cavity for circulating said heated air inside said heating cavity, first microwave screen means, positioned within said outer casing on the side thereof opposite said door means for preventing the leakage of microwave energy from said heating cavity through said housing, an exhaust passage positioned between said heating cavity and said outer casing, for allowing said heated air to flow out of said outer casing, and seal means interposed between said door means and a periphery of said opening of said heating cavity for preventing the leakage of microwave energy and heated air from inside of said heating cavity to outside of said heating cavity through the space between said door means and the periphery of said opening.

4,211,910

HIGH FREQUENCY HEATING APPARATUS WITH IMPROVED DOOR ARRANGEMENT

Shigeru Kusunoki, Yamatokoriyama, and Junzo Tanaka, Fujiidera, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 7, 1978, Ser. No. 958,448

Claims priority, application Japan, Dec. 21, 1977, 52/155210

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 D **9 Claims**

1. A high frequency heating apparatus which comprises:

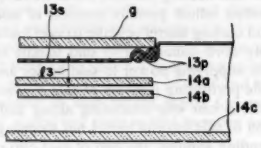
(a) an oven defining structure,

(b) a heating cavity defined by wall members within said oven defining structure,

(c) a door assembly adapted to selectively open and close an access opening defined at one side of said heating cavity, and

(d) means for supplying microwave energy into said heating cavity for dielectric heating of an object to be heated placed therein,

said door assembly further comprising a door shielding member and a plurality of glass plate members disposed in front of and on the outer side of said door shielding member, said shielding member having an impedance and said



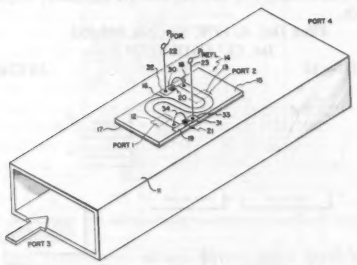
plurality of glass plate members being of a material and having a thickness and being spaced from said shielding member and each other for making the composite impedance Z_T of said shielding member, said glass plate members and the space outside said heating cavity equal to or smaller than the composite impedance Z_S of the shielding member and the space outside the heating cavity without said glass plate member and also substantially different from the impedance of the space within said heating cavity.

4,211,911

MICROWAVE DIRECTIONAL COUPLER AND DETECTOR MODULE

Rudolph A. Dehn, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 16, 1979, Ser. No. 3,866
Int. Cl.[2] H05B *9/06*; G01R *21/12*; H01P *5/18*
U.S. Cl. 219—10.55 F **9 Claims**



1. A directional coupler and detector in combination with wavewguide through which microwave energy propagates from a source to a load and vice versa and which has a pair of coupling apertures in one wall that are spaced apart in the direction of wave propagation one quarter wavelength as measured in the waveguide system;

said directional coupler and detector comprising a secondary transverse electromagnetic (TEM) transmission line intersecting said apertures which has a length of five quarters of a wavelength or an integral number of wavelengths longer as measured in the secondary line system between the intersections with said apertures, a portion of the microwave energy being coupled through said apertures into the secondary line;

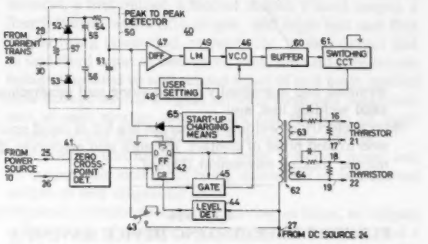
a terminating resistance at either end of said secondary transmission line, and a diode detector and series bypass capacitor connected across each resistance for developing output signals respectively indicative of forward and reflected power flow in the waveguide.

4,211,912

INDUCTION HEATING APPARATUS

Mitsuyuki Kiuchi, and Shigeo Hamaoka, both of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 24, 1978, Ser. No. 927,649
Claims priority, application Japan, Jul. 27, 1977, 52/90723
Int. Cl.[2] H05B *5/04*
U.S. Cl. 219—10.77 **8 Claims**



1. An induction heating apparatus comprising a pair of gate-controlled semiconductor switching devices connected in inverse parallel relationship to each other to receive power from a source of low frequency energy, a commutation circuit including a capacitor and a work coil, a pulse generator for generating a train of control pulses at a high frequency in the ultrasonic frequency range for successively driving one of said switching devices into conduction depending on the polarity of said low frequency energy to supply a forward halfwave current in response to each conduction of said switching devices to said commutation circuit to permit same to generate a backward halfwave commutating current through the other switching device to thereby generate a high frequency alternating current in said work coil, each of said control pulses having a duration longer than the maximum duration of said forward current, and a pulse transformer having a pair of secondary windings connected to said switching devices respectively and a primary winding responsive to said control pulse to generate an induced voltage in each of said secondary windings, whereby the control gates of said switching devices are simultaneously supplied with a positive pulse of the same duration as said control pulse and are simultaneously supplied with a negative bias potential in response to the trailing edge of said control pulse.

4,211,913

AUTOMATIC WELDING OF RESISTANCE WIRES ON RESISTORS TERMINALS

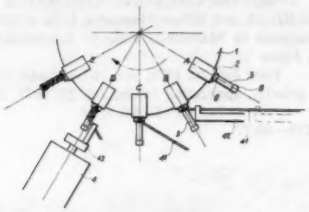
Giuseppe Camardella, Saronno, Italy, assignor to Tekma Kinomat S.p.A., Caronno Pertusella, Italy

Filed Jan. 26, 1978, Ser. No. 872,500
Claims priority, application Italy, Jan. 27, 1977, 19689 A/77
Int. Cl.[2] B23K *11/00*
U.S. Cl. 219—56.22 **17 Claims**

1. A method for electrically welding the ends of metal wires to metal terminals of electrical resistors formed from wire wound on an insulating rod, of the type in which said terminals have an essentially cylindrical surface on which the wire to be welded is rested obliquely and transversely to a generating or axial welding line, wherein:

at least one welding electrode is used, of thin, elongated arcuate profile with its convexity facing the wire to be welded,

one of the ends of said arcuate profile of said electrode is placed in contact with the surface of the metal terminal, the electrode is then given a rocking movement, the centre of instantaneous rotation of which coincides with the point of contact of the electrode with the surface of the



terminal, and is gradually moved along said generating or axial welding line, and

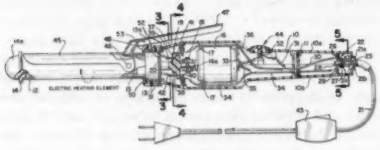
several electrical welding discharges are fed in rapid succession to said point of contact, through said electrode, during the rocking movement thereof.

4,211,914

ELECTRIC HAIR CURLING DEVICE HAVING A ROTATABLE CURLING BARREL

Larry D. Jackson, 1419 E. 111th St., Cleveland, Ohio 44106

Filed Jul. 29, 1977, Ser. No. 820,303
Int. Cl.[2] A45D *1/04, 2/36;* **H05B** *1/00*
U.S. Cl. 219—225 **1 Claim**



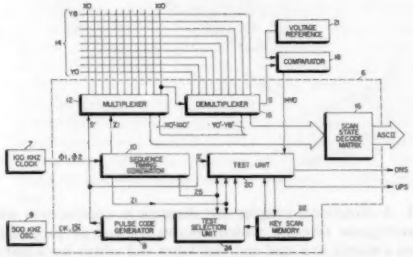
1. A hair curling device comprising an elongated handle having a front end forming a socket, said handle including a pair of side-by-side sections coupled together by fasteners, a hollow enlongated cylindrical hair curling barrel having a cylindrical enlarged rear end rotatably received in the socket of said handle front end, an annular cap-like coupling member secured to and surrounding said handle front end and coupling said curling barrel enlarged end in said handle socket while allowing rotation of said curling barrel relative to said handle, said curling barrel extending forwardly from the front end of said handle, stop means located in the socket of said handle front end and abutting the rear face of said barrel enlarged end when such end is received in the socket of said handle front end, said cap-like coupling member abutting the front face of said barrel enlarged end to retain the enlarged end in said socket, an electric heating element mounted in the hollow of said barrel for rotation therewith, said barrel being electrically insulated from said heating element, a thermally insulating tip end member on the other end of said barrel, said tip end member being a smooth extension of said curling barrel and including a heat insulating radially extending annulus between said tip end member and the other end of said curling barrel, said tip end member and annulus being made of heat insulating material, said radially extending annulus being adapted to contact the scalp during use of the device to prevent burning of the scalp by the curling barrel, a fractional horsepower electric motor fixed in said handle concentric with said barrel, said electric motor having a drive shaft drivingly directly connected to an electrically insulative drive coupling, said drive coupling being mounted in said handle and connected to said curling barrel enlarged end for rotating said curling barrel, said motor including built-in means limiting the top speed of said electric motor, said handle having a swivel electric connector on a rear end thereof, a pair of heating element slip rings electrically connected to the terminals of said heating element and mounted on said drive coupling for rotation therewith, a pair of heating element electrical shoes fixedly mounted in said handle and slidingly electrically connected to respective ones of said heating element slip rings, a motor control switch on said handle, electrical connections connecting said handle swivel electric connector to said motor via said motor switch, electrical connections connecting said handle swivel electrical connector to said heating element shoes thereby providing an electrical circuit which permits rotation of said heating element and said curling barrel relative to said handle, an electric power supply cord connected to said handle swivel electric connector for supplying power to said motor and said heating element while permitting rotation of said power cord relative to said handle a hair clip extending along and parallel to a major portion of said curling barrel but stopping short of said radially extending annulus, the end of said clip removed from said tip end member being pivotally mounted on said barrel for movement toward and away from said barrel and being provided with an operating handle for pivotally oscillating said clip relative to said barrel, said handle swivel electric connector having a pair of handle slip rings and a pair of handle shoes electrically and slidingly connected thereto, said electric cord being connected to said slip rings and said electrical connections being connected to said handle shoes so that said handle can rotate relative to said power supply cord without tangling said power supply cord, whereby said swivel connection supplies electric current to said electric motor and electric heating element, said handle sections forming an outer continuous shell extending from said handle rear end to said handle front end, and a control switch in said electric power supply cord for controlling the supply of power to said heating element and said motor switch.

4,211,915

KEYBOARD VERIFICATION SYSTEM

Donald E. Miller, Waynesboro, and John P. Painter, Grottoes, both of Va., assignors to General Electric Company, Waynesboro, Va.

Filed Dec. 4, 1978, Ser. No. 965,852
Int. Cl.[2] G01R *31/28*
U.S. Cl. 371—15 **33 Claims**



1. A system for verifying the actuation of the individual keys of a keyboard wherein signal coupling between selected lines of at least a first and a second set of signal lines is established when a corresponding selected key changes from its inactive to its active state;

said system comprising:

means for applying first and second clock signals;

a pulse signal generator controlled by said first clock signal;

means controlled by said second clock signal for periodically applying said pulse signal to respective ones of said first set of lines in succession;

means controlled by said second clock signal for periodi-

cally scanning respective ones of said second set of lines in succession, the scan duration for each of said second lines being substantially coextensive with the successive application of said pulse signal to all of said first lines, each of said scans being adapted to sense signals coupled through to said scanned second line from any of said first lines indicative of the active state of the corresponding keys;

memory means for storing signals representative of the state of each key;

first and second test means timed by said second clock signal and responsive to said sensed signal for determining the state of the key under test;

means responsive to the previously stored state of said key for selecting one of said test means;

means responsive to the selected test means and to said previously stored key state for generating an output signal indicative of the newly verified state of said key; and

means responsive to said output signal for updating said previously stored key state in said memory means.

4,211,916

DEVICE FOR DIAGNOSING MICROPROGRAM COMPUTERS

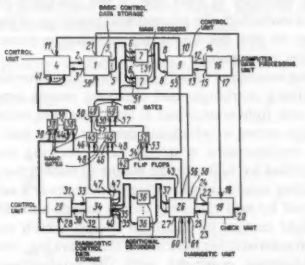
Mark I. Baxansky, ulitsa Dekabristov, 127, kv. 222; Valery F. Gusev, ulitsa Karbysheva, 13a, kv. 35; Genrikh I. Krengel, ulitsa Ibragimova, 45, kv. 49; Viktor P. Mikhailov, ulitsa Kosmonavtov, 22, kv. 50; Ravil S. Kuramshin, ulitsa Soldatskaya, 7, kv. 1; German P. Sorokin, ulitsa Chernyshevskogo, 24/23, kv. 12, and Azat U. Yarmukhametov, ulitsa Adelya Kutuya, 12, kv. 23, all of Kazan, U.S.S.R.

Filed Dec. 14, 1977, Ser. No. 860,309

Claims priority, application U.S.S.R., Dec. 16, 1976, 2428151[I]

Int. Cl.[2] G06F *11/04*

U.S. Cl. 371—15 **1 Claim**



1. A device for diagnosing microprogrammed computers, comprising:

a basic control data storage having a first input, a second input, a first output, a second output, and a group of outputs;

a first control unit having a first input, a group of inputs, a second input, and an output, said first input and said output being connected, respectively, to said first output and said first input of said basic control data storage;

first decoders, each having a group of data inputs, an activate input and an output, said data inputs being connected to respective outputs of said group of outputs of said basic control data storage, the number of said first decoders being equal to the number of microorders executed within a machine cycle;

a second control unit having a group of inputs, an input, a first output, a second output, and a third output, said group of inputs being connected to said output of a respective first decoder, and said first output being connected to said second input of said first control unit;

a processing unit, for processing data of said computer, having an input, a first output, and a second output, said input and said first output being connected respectively to said second output and to said input of said second control unit;

a check unit having a first input, a second input, a third input, and an output, said first and second inputs being connected, respectively, to said second output of said processing unit and to said second output of said basic control data storage;

a diagnostic unit having an input, a group of inputs, an enabling input receiving a signal enabling operation of said diagnostic unit following an error signal arriving from said output of said check unit, an activating input receiving a signal activating said diagnostic unit at any moment, a first output, a second output, a third output, a fourth output, and a fifth output, said input and said first output being connected, respectively, to said output and to said third input of said check unit, and said fifth output being connected to said second input of said basic control data storage so that a signal arriving from said diagnostic unit at said storage discontinues the selection of basic control words from said basic control data storage;

a third control unit having a first input, a second input, and an output, said first input being connected to said second output of said diagnostic unit;

a diagnostic control data storage having an input, an output, a first group of outputs, a second group of outputs, and a third group of outputs, said input and said output being connected, respectively, to said output and said second input of said third control unit;

second decoders, each having an input and an output, said input being connected to a respective output of said first group of outputs of said diagnostic control data storage, and said output being connected to a respective input of said group of inputs of said diagnostic unit, the number of said second decoders being equal to the number of the diagnostic microorders executed within an operation cycle of said diagnostic unit;

a first group of NAND gates, each having a first input, a second input, and an output, said first input being connected to a respective output of said second group of outputs of said diagnostic control data storage, and said output being connected to a respective input of said group of inputs of said first control unit;

a first flip-flop having an input and an output, said input being connected to said third output of said diagnostic unit and said output being connected to said second input of each of said NAND gates so that the address flags of an individual basic control word of said basic control data are applied from said diagnostic control data storage, in the presence of an enable signal from said output of said first flip-flop, to said first control unit;

a second group of NAND gates, each having a first input, a second input, and an output, said first input being connected to a respective output of said third group of outputs of said diagnostic control data storage, and said second input of each of said NAND gates being connected to said output of said first flip-flop;

a group of NOR gates, each having a first input, a second input, and an output, said first input being connected to said output of a respective NAND gate of the second group of NAND gates, and said output being connected to said activate input of a respective first decoder so that the flags of the basic microorder contained in said selected basic control word and providing for execution of a predetermined diagnostic procedure are applied via said NAND gates of the second group, in the presence of an enable signal from said output of said first flip-flop, and via said NOR gates to a respective first decoder, thereby activating execution of a predetermined basic microorder;

a second flip-flop having a first input, a second input, and an output, said second input being connected to said fourth output of said diagnostic unit, said first input being connected to said third output of said second control unit, and

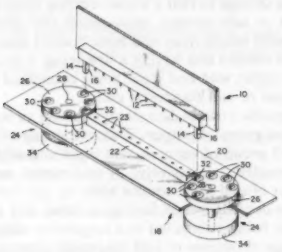
said output being connected to said second input of each of said NOR gates so that following the arrival, from said third output of said second control unit, of a signal to set said second flip-flop, the second flip-flop produces a signal which passes via said NOR gates to said activate input of each of said first decoders, the arrival of a signal from said fourth output of said diagnostic unit resetting said second flip-flip so that all of said first decoders are deactivated.

4,211,917

CIRCUIT BOARD TESTING APPARATUS AND METHOD

George F. Hofmann, Des Moines, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 17, 1978, Ser. No. 925,302
Int. Cl.[2] G06F *11/00*; G01R *15/12, 31/02*
U.S. Cl. 371—20 **17 Claims**



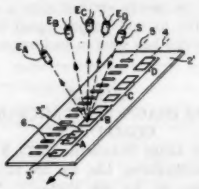
1. A testing system comprising:
a. a testing apparatus
b. a plurality of units which are to be tested by said testing apparatus,
c. a plurality of keying means, each keying means being mounted to a related one of said units, with each keying means having a predetermined mating orientation unique to the unit to which that keying means is mounted,
d. a unit inter-facing member adapted and arranged to be connected to said testing apparatus and selectively connected to said units, said unit inter-facing member comprising:
1. a movable mating means mounted to said unit inter-facing member in a manner to be moveable to a plurality of mating locations, each mating location corresponding to a related one of said keying means, such that at any one of said mating locations the mating means is able to be matched to the corresponding keying means to engage that keying means in mating relationship and permit the unit inter-facing member to be connected to that unit having the keying means for which the mating means is matched,
2. a plurality of identifying circuit means provided by said inter-facing member, each of said circuit means corresponding to a related one of said units, and being arranged to generate an identifying signal for the unit to which that circuit means corresponds,
3. switch means connected to the plurality of circuit means and said testing apparatus, in a manner that with movement of said mating means to any particular mating location, said switch means connects to the testing apparatus the circuit means which corresponds to the unit having the keying means corresponding to that particular mating location,
whereby when a particular unit is connected to said inter-facing member to be tested by said testing apparatus, said mating means is necessarily moved to a mating location corresponding to the keying means of that particular unit, with the result that the circuit means corresponding to that particular unit transmits to the testing apparatus the signal identifying that particular unit, thus ensuring that the testing apparatus is able to perform a testing procedure appropriate to that particular unit.

4,211,918

METHOD AND DEVICE FOR IDENTIFYING DOCUMENTS

Alex Nyfeler, Baar; David L. Greenaway, Oberwil, and Heinz Lienhard, Zug, all of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Jun. 6, 1978, Ser. No. 913,205
Claims priority, application Switzerland, Jun. 21, 1977, 7557/77
Int. Cl.[2] G06K *7/10*; G02B *5/18*; G06K *19/00*
U.S. Cl. 235—454 **15 Claims**



8. An apparatus for identifying documents, said documents having contained a multiplicity of machine-readable optical markings which characteristically modify incident light by either diffraction or refraction, said markings being of at least two different kinds each causing a different characteristic modification of incident light, and said markings being arranged at least in pairs in a characteristic configuration on the documents, whereby said configuration is the same for all documents, selected said markings having subsequently been cancelled whereby at least one of the markings of the same kind is not cancelled, the geometrical positions of the markings remaining on the document representing a piece of coded information, comprising:
checking means for serially checking the authenticity of said remaining markings, said checking means comprising at least one light source and at least one light receiver; and a storage means in which information about said characteristic configuration is stored, said checking means being controlled by said storage means in such a way that said checking means supplies a signal whenever a said marking scanned by said checking means causes a modification of the light emitted by said light source, which modification is characteristic for the kind of that marking, whose stored configuration coincides with the configuration of the scanned marking.

4,211,919

PORTABLE DATA CARRIER INCLUDING A MICROPROCESSOR

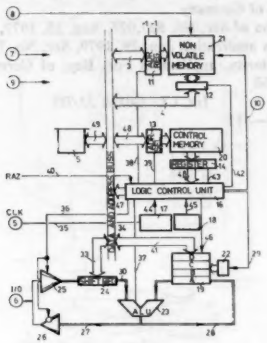
Michel Ugon, Saint-Ouen, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France

Filed Aug. 25, 1978, Ser. No. 936,694
Claims priority, application France, Aug. 26, 1977, 77 26107
Int. Cl.[2] G06K *19/06*
U.S. Cl. 235—487 **3 Claims**

1. A portable data carrier for storing and processing data, comprising:
a microprocessor,
a memory operatively associated with said microprocessor having a first zone to which access by devices external to said carrier is prevented, and in which reading and writing by circuits internal to said carrier are permitted;
said microprocessor including internal first means for reading and writing in said memory; second means for receiving external data to be written in said memory, and third

means for externally transmitting data read from said memory,

said first means internal to said portable data including means for checking an enabling key received from a device external to said carrier,



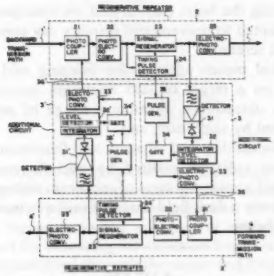
and said portable data carrier further comprising means associated with said reading element for storing error information in a zone of said memory in the event the received key is incorrect; and

means associated with said reading element for storing access information in another zone of said memory in the event the received key is correct.

4,211,920
FAULT LOCATION SYSTEM FOR OPTICAL REPEATING PATHS

Hiroharu Wakabayashi, Nakamura, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Jan. 3, 1979, Ser. No. 710
Claims priority, application Japan, Jan. 9, 1978, 53-523
Int. Cl.² H04B 9/00, 3/46
U.S. Cl. 455—601 **3 Claims**

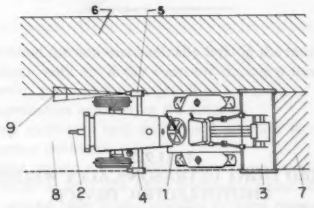


1. An optical repeating path fault location system for a PCM optical transmission system which is composed of a backward transmission path and a forward transmission path respectively formed of separated optical fibers and having disposed therein a plurality of PCM optical regenerative repeaters at the same repeating positions for the backward transmission path and the forward transmission path, wherein there are provided for each of the backward transmission path and the forward transmission path at each repeater position a detector for extracting from each one of the backward transmission path and the forward transmission path at least one of frequency signal components individually assigned to the repeaters to provide a detected output, and pulse generating means responsive to the detected output to generate a predetermined common test pattern pulse train for applying as an optical signal to the input portion of the corresponding repeater in each of the other of the backward transmission path and the forward transmission path, wherein repeater identify signals including the frequency signal components respectively assigned to the sequentially disposed PCM optical regenerative repeaters of each one of the backward transmission path and the forward transmission path are sequentially transmitted from a signal transmitting station of each one of the backward transmission path and the forward transmission path is monitored for a fault on the basis of the reception result of the test pattern pulse train received by the signal transmitting station via each of the other of the backward transmission path and the forward transmission path.

4,211,921
SENSOR FOR USE IN CONTROLLING OPERATION OF MOBILE FARMING MACHINE

Yuuji Kanetou, and Hirofumi Uetani, both of Matsuyama, Japan, assignors to Iseki Agricultural Machinery Mfg. Co. Ltd., Matsuyama, Japan

Filed Feb. 3, 1978, Ser. No. 874,879
Int. Cl.² G06K 11/02
U.S. Cl. 250—202 **7 Claims**



1. In combination, a vehicle which is driven along a predetermined path in working a field, and a sensor for controlling the operation of said vehicle in working the field, said sensor comprising a camera mounted on said vehicle so as to optically view the image of the line defining the boundary of the worked and unworked portions of the field to define the path of travel of said vehicle, said camera including means for compressing said image, and photoelectric converting means comprising a plurality of photoelectric elements operatively associated with said camera, said photoelectric elements being arranged in a row disposed generally normal to the image of said boundary line whereby the direction of movement is controlled by detecting the degree of shifting of said line image on said array of photoelectric elements by comparing the photoelectric output from said photoelectric elements.

4,211,922
HELIOSTAT GUIDANCE

Eugene G. Vaerewyck, Murrysville; Robert C. Miller, Penn Hills, and Arthur E. Anderson, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

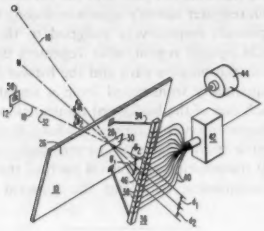
Filed Nov. 1, 1978, Ser. No. 956,778
Int. Cl.² G01J 1/20
U.S. Cl. 250—203 R **6 Claims**

1. In a heliostat system wherein solar radiation is reflected from a mirror onto a receiver, apparatus for movably positioning the mirror comprising:

(a) a line image producing lens disposed through said mirror;

(b) a multi-element photosensor rigidly affixed behind said mirror disposed such that an image of the sun and an image of said receiver are focusable upon said photosensor, said photosensor having a preselected element dis-

posed along the normal to said mirror through the center of said lens; and



(c) means utilizing signals from said photosensor created by said images for positioning said mirror such that said images are predetermined distances from said preselected element.

4,211,923

FLUID TIGHT ULTRASONICALLY WELDED PHOTOELECTRIC DEVICE

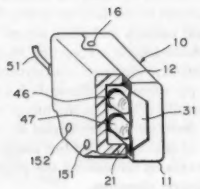
Toshifumi Fukuyama, and Hideaki Hattan, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 17, 1978, Ser. No. 887,795

Claims priority, application Japan, Mar. 18, 1977, 52/29967

Int. Cl.[2] H01J *5/02;* **B29C** *27/08*

U.S. Cl. 250—239 **11 Claims**



1. A photoelectric switch comprising:

a housing consisting of two shells of opaque plastic material welded together by ultrasonic welding;

a window means of transparent plastic material welded to said shells by said ultrasonic welding, said window means being formed and attached to said shells in such a manner that it includes no peripheral portion which is in parallel with a welding pressure direction of said ultrasonic welding;

at least one electrooptical transducer disposed in said housing is a position to optically communicate with the exterior of said housing through said window means;

an electrical circuit means placed in said housing and connected to said at least one electrooptical transducer; and

an electric conductor connected to said electrical circuit means and led out of said housing.

4,211,924

TRANSMISSION-TYPE SCANNING CHARGED-PARTICLE BEAM MICROSCOPE

Karl-Heinz Müller; Burkhard Krisch; Volker Rindfleisch, and Hans F. R. Neuendorff, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

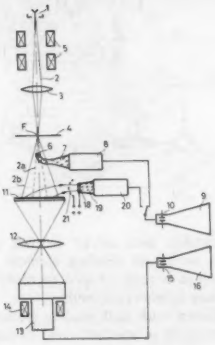
Continuation of Ser. No. 827,027, Aug. 23, 1977, abandoned.

This application Jan. 29, 1979, Ser. No. 7,647

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2640260

Int. Cl.[2] G01M *23/00*

U.S. Cl. 250—311 **9 Claims**



1. In a transmission-type, scanning, charged-particle beam microscope including a television camera tube and a television display tube for generating and displaying a diffraction image of a specimen to be examined, said beam comprising a primary ray cone and a scatter-ray cone which generate a bright-field image and a dark-field image of said specimen, respectively, said microscope further comprising means for detecting a bright-field image of said specimen generated by said beam, the improvement comprising,

a transparent fluorescent screen disposed behind said specimen along the beam path in said microscope;

means adapted to prevent said primary ray cone from striking said screen;

light-optical means adapted for imaging said fluorescent screen on a target of said television camera tube and thereby detecting a diffraction image of said specimen generated by said beam; and

detector means disposed adjacent said fluorescent screen for detecting radiation emitted by said fluorescent screen when said scatter-ray cone of said beam strikes said screen and thereby a dark-field image of said specimen generated by said beam.

4,211,925

CT SCANNER WITH ANODE SCAN MONITOR

Ian A. Fairbairn, Maidenhead, England, assignor to E M I Limited, Middlesex, England

Filed Apr. 19, 1978, Ser. No. 897,787

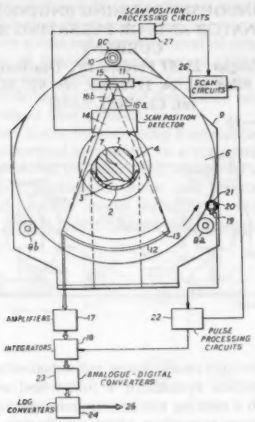
Claims priority, application United Kingdom, Apr. 28, 1977, 17744/77

Int. Cl.[2] A61B *6/00*

U.S. Cl. 250—445 T **6 Claims**

1. A radiographic apparatus for examining a slice of the body of a patient, including a source of a substantially planar fan-shaped distribution of radiation originating from an anode included in the source, means for scanning the origin of the radiation in relation to the anode and a scan position indicator including means for detecting the intensity of the radiation and

at least two gratings, disposed to shield the means for detecting, co-operating to modulate the intensity of the radiation



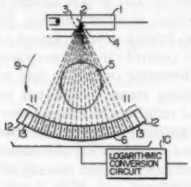
incident on the means for detecting in a manner related to the position of said origin.

4,211,926

TOMOGRAPHIC IMAGING SYSTEM

Chitose Nakaya, Hachioji; Hideki Kohno, Tokyo; Hidemi Shiono, Akikawa; Kensuke Sekihara, Tokyo; Shinji Yamamoto, Hachioji; Teruichi Tomura, Kunitachi, and Takayuki Hayakawa, Hachioji, all of Japan, assignors to Hitachi Medical Corporation, Japan

Filed Apr. 28, 1978, Ser. No. 901,241
Claims priority, application Japan, Sep. 2, 1977, 52-104922
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—445 T **5 Claims**



1. A tomographic imaging system comprising:

generating means for generating penetrating radiation toward an object under investigation;

detecting means including an array of radiation sensitive detectors for detecting the radiation from said generating means transmitted through the object and for providing an output indicative thereof, said detecting means including at least one side of said detector array of radiation sensitive detectors, a checking detector being responsive to the radiation generated by said generating means which normally does not pass through the object under investigation for checking whether the object is positioned within a field of view of said detector array of radiation sensitive detectors, said checking detector providing an output indicative of the radiation generated which normally does not pass through the object;

means for comparing the output of said checking detector with a predetermined value for determining whether the object is positioned within the field of view of said detector array;

means for rotating said generating means and said detecting means while keeping a predetermined relative relationship in position with respect to each other; and

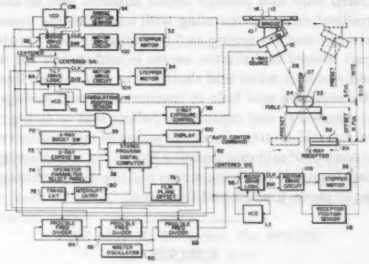
means for processing the output from said detector array to produce a tomographic image of the object.

4,211,927

COMPUTERIZED TOMOGRAPHY SYSTEM

Melbourne J. Hellstrom, Severna Park; Allen I. Perlin, and Edward Kutlik, both of Baltimore, all of Md., assignors to CGR Medical Corporation, Baltimore, Md.

Filed Nov. 24, 1978, Ser. No. 963,178
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—445 T **26 Claims**



1. A method for non-mechanically linking the motions of an X-ray source with an X-ray receptor during a tomographic procedure to produce a tomograph of a section of an object under examination comprising the steps of:

effecting motion of said source and receptor to respective reference positions;

thereafter during a tomographic procedural mode generating from at least one fixed frequency signal source first and second pulse trains, adapted to drive respective stepper motors, for effecting motion of said source and receptor, said pulse trains having a predetermined mathematical relationship dependent upon the desired fulcrum height of the tomographic section to be produced; and

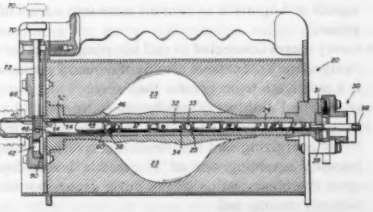
applying said first and second pulse trains to the respective stepper motors for a predetermined number of pulse counts to effect motion with respect to said respective reference positions and effecting a tomographic sweep thereby.

4,211,928

LINEAR STORAGE PROJECTOR

George W. Parsons, Jr., North Reading, and John J. Munro, III, Westford, both of Mass., assignors to Technical Operations, Incorporated, Boston, Mass.

Filed Nov. 27, 1978, Ser. No. 964,079
Int. Cl.[2] G21F *5/02*
U.S. Cl. 250—497 **10 Claims**



1. In radiographic apparatus for manipulating a quantity of

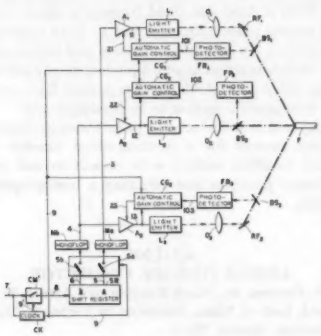
radioactive material between a stored position and a use position including a capsule of said radioactive material, a storage unit with means defining a passage through it, for storing the capsule in the passage and shielding the surrounding environment from the stored radioactive material, and manipulating means connectible to said storage unit at a first end of said passage for moving said capsule between a stored position within the passage and a use position outside the second end of said passage, the improvement comprising: a shutter mounted on said storage unit for sliding movement transverse to the second end of said passage between first and second limits, said shutter in said first limit blocking said second end, said shutter having a hole through it which registers with said passage when the shutter is in said second limit, shutter-retaining means associated with said passage means adjacent said second end and resilient means cooperating with said retaining means and said storage unit for urging said retaining means to project an end-part toward said shutter, means in said shutter for receiving said end-part when said shutter is in said second limit and thereby retaining said hole in register with said passage, and means coupled to said capsule for pulling said retaining means away from said shutter against the action of said resilient means under control of said manipulating means for withdrawing said end-part from said receiving means and thereby permitting said shutter to move toward said first limit.

4,211,929

FIBER-OPTICAL SYSTEM FOR TRANSMITTING MULTILEVEL SIGNALS

Giovanni Tamburelli, Turin, Italy, assignor to CSELT—Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Aug. 29, 1978, Ser. No. 937,816
Claims priority, application Italy, Sep. 5, 1977, 68972 A/77
Int. Cl.² G02B *27/00*
U.S. Cl. 250—55 **8 Claims**



1. A system for translating binary electrical signals into multilevel luminous signals, comprising:

sampling means connected to a source of said electrical signals and operable to convert same into a train of binary pulses;

memory means connected to said sampling means for temporarily storing successive groups of n binary pulses where n is a positive integer greater than zero;

a set of 2^n-1 emitters of incoherent light;

circuit means connected to said memory means for selectively energizing said emitters with a collective luminous intensity assuming one of 2^n possible levels depending upon the binary value of the pulse group stored in said memory means; and

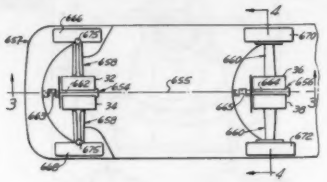
fiber-optical means positioned to receive light from all said emitters for transmission to a load.

4,211,930

VEHICLE PROPULSION SYSTEM BY INDIVIDUAL STEPPING MOTORS FROM CONTINUOUSLY-RUNNING ENGINE-DRIVEN ALTERNATOR AND/OR PULSATING BATTERY CURRENT

Werner H. Fengler, 23651 Fordson Dr., Dearborn, Mich. 48124

Filed Jul. 24, 1978, Ser. No. 927,353
Int. Cl.² B60L *11/02*
U.S. Cl. 290—15 **10 Claims**



1. An engine-driven-alternator individual-wheel-motorized electric propulsion system for a four-wheel motor vehicle provided with a steering mechanism, said system comprising

an engine-driven two-phase alternator having a two-phase alternator output,

a plurality of electric stepping motors adapted to be drivingly connected one to each vehicle wheel and having motor inputs,

each stepping motor having a rotor and also having a stator with a multiplicity of pole pieces arranged in first and second sets disposed in alternate sequence with the pole pieces of each set having alternate opposite windings imparting alternate opposite polarities to the stator pole pieces of each set upon energization thereof,

each stator pole piece having a first winding adapted to be energized by pulses of rectified alternating current and a second winding thereon adapted to be energized by pulses of direct current,

a storage battery,

a pulse-responsive electric power system including a plurality of gate-controlled rectifiers having power current input means and also having power current output means,

a stepping motor control circuit interposed between and connecting said alternator output to said motor inputs and including switching means connected to the gates of said gate-controlled rectifiers and responsive to the reception of positive or negative pulses for selectively energizing said first and second windings of said stator pole pieces separately and simultaneously and thereby effecting step-by-step rotation of said rotors,

variable frequency generating means electrically connected to said pulse-responsive electric power system including said plurality of gate-controlled rectifiers,

and a frequency control circuit for selectively controlling the frequency output of said variable frequency generator means.

4,211,931

ELECTRONIC SPEED ERROR SIGNAL PROCESSING CIRCUIT

Charles W. Eichelberger, Schenectady, and Edward S. Andrejko, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,519
Int. Cl.² H02P *9/04*
U.S. Cl. 290—40 A **6 Claims**

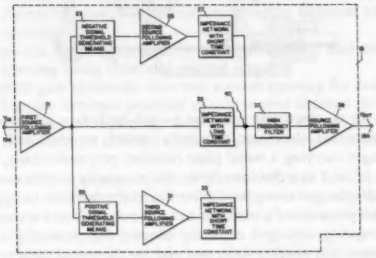
1. A signal processor comprising:

first channel means for providing a substantially unattenuated output signal in response to error signal fluctuations above a selected threshold level of one polarity regardless of frequency, said first channel means including a first

signal threshold generating means operatively connected to a first impedance network with a predetermined time constant;

second channel means for providing a substantially unattenuated output signal in response to error signal fluctuations above a selected threshold level of opposite polarity regardless of frequency, said second channel means including a second signal threshold generating means operatively connected to a second impedance network with a predetermined time constant; and

third channel means for providing a substantially unattenuated output signal in response to error signal fluctuations below a selected frequency and substantial attenuation to error signal fluctuations above said selected frequency, said third channel means including a third impedance network with a predetermined time constant,



said first and second signal threshold generating means comprising a current source supplying current to a first resistor in series with a second resistor of equal value, the juncture between said current source and said first resistor maintaining a negative threshold level with respect to the juncture of said first and second resistors, and the remaining terminal of said second resistor maintaining a positive threshold level with respect to the juncture of said first and second resistors; and

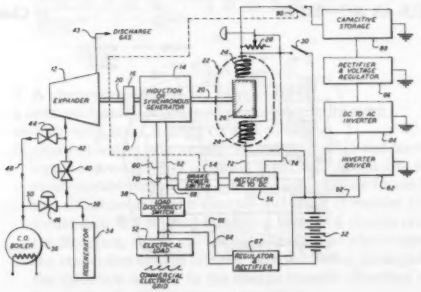
said first, second and third channel means including respective inputs operatively coupled together to comprise the input to said signal processor and said first, second and third channel means including respective outputs operatively coupled together to comprise the output of said signal processor.

4,211,932

POWER RECOVERY SYSTEM

Carl H. Geary, Jr., Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 8, 1978, Ser. No. 903,461
Int. Cl.[2] F02G *3/00*
U.S. Cl. 290—52 **10 Claims**



1. A system for recovering power from a relatively high temperature high mass flow, low pressure, low density, high specific volume waste heat fluid formed directly from the combustion of a process gas comprising:

expansion means to receive said relatively high temperature waste heat fluid;

electrical power generating means connected to said expansion means and operated thereby as a result of the expansion of the fluid therethrough; and

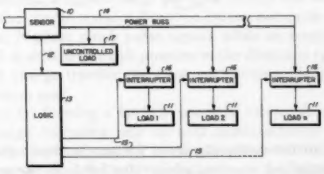
dynamic power absorbing means intermittently connected to said expansion means for applying a brake torque acting thereon for intercepting acceleration of said expansion means above a predetermined magnitude when said expansion means is operating other than at steady state conditions.

4,211,933

ELECTRICAL LOAD RESTORATION METHOD

Walter P. Hedges, Laveen, and C. Gardner Sullivan, II, Phoenix, both of Ariz., assignors to Cyborex Laboratories, Inc., Phoenix, Ariz.

Filed May 26, 1978, Ser. No. 909,850
Int. Cl.[2] H02J *3/14*
U.S. Cl. 307—35 **3 Claims**



1. In an energy management method employing apparatus for automatically limiting the total instantaneous consumption of electrical energy in a residence having a plurality of energy-consuming variable demand loads having different nominal current demands, said method including

measuring the total current to the loads which are then in operation, and

automatically interrupting the current, if any, to each of said loads in a predetermined sequence when the total current to the loads then in operation exceed the predetermined peak total current demand, until the total current is less than the predetermined peak total,

the improvement whereby current consumption is maintained as high as possible without exceeding said predetermined peak demand, said improvement comprising:

(a) establishing a predetermined load shedding sequence which is independent of the nominal current demands of said loads;

(b) measuring the actual consumption values of each load which is interrupted;

(c) selecting from among those loads which have been interrupted, the loads which, according to said actual values and independent of said nominal values, can be restored without causing said total current to exceed predetermined peak demand; and

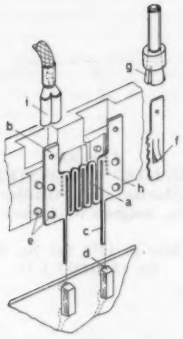
(d) automatically restoring said selected loads to operation;

the measurement of said actual consumption values enabling load restoration selections based thereon without modification of said energy management apparatus to account for variations in the nominal demands of said loads.

4,211,934
CURRENT-MEASURING INPUT FOR AN ELECTRONIC RELAY

Burkhard Henle, Birr; Ivica Vukasovic, and Michael Fiorentzis, both of Wettingen, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 1, 1977, Ser. No. 812,600
Claims priority, application Switzerland, Jul. 8, 1976, 8742/76
Int. Cl.[2] G01R *15/08*
U.S. Cl. 307—98 1 Claim

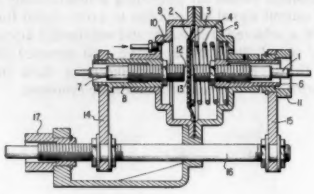


1. A current-measuring input for an electronic evaluation unit, especially for an electronic relay fed from the secondary wnding of a main current transformer, including: a shunt resistor made of flat sheet material which bridges the secondary winding of the main current transformer, the resistor having an impedance of a value such that the secondary winding is almost shortcircuited, and the voltage drop across the shunt resistor is sufficient for application to the electronic relay having adjustment means and tapping points; said shunt resistor being located in the base of a plug-in means; a miniature isolating transformer located between said shunt resistor and said electronic relay for isolating the electronics from a power section; said shunt resistor being stamped from a flat sheet; said shunt resistor being connected electrically by flat-pin connector means; said shunt resistor being formed so that the outgoing measuring contacts are connectable thereto by a socket soldered direct to circuit boards; said shunt resistor being fixed in the base by shapes provided during stamping; said shunt resistor being given a required resistance value by a serpentine shape; screw connections for electrical connection, said flat-pin connector for connecting said shunt resistor being fitted with an adapter allowing connection to be made to threaded pins; the value of the impedance of said shunt resistor being adjustable by perforations in said flat sheet material; said flat sheet material forming said shunt resistor having tape so that a voltage drop across different taps remains the same for different currents; said shunt resistor being contained in a housing corresponding substantially to a circuit board edge connector, cold parts of said resistor being against the housing while warm parts of said resistor being in a cavity; said shunt resistor with housing being usable in a card magazine; said housing being of one-piece, said shunt resistor being plugged into said housing and held in position by stamped retaining springs.

4,211,935
ELECTRONIC PRESSURE SWITCH

Ludwig Erben, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,214
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711346
Int. Cl.[2] H01H *35/34*
U.S. Cl. 307—118 6 Claims

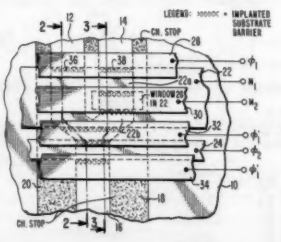


1. In an electronic pressure switch including a first axially displaceable electronic proximity switch member and a diaphragm carrying a metal plate oriented perpendicularly to the axis of, and at a distance from, the proximity switch member, the diaphragm being movable toward the member in response to the pressure of a medium to be monitored, and a compression spring arranged coaxially around the proximity switch member and bearing with one end on the metal plate to urge the plate and the diaphragm away from the switch member, the switch member being disposed to one side of the diaphragm and cooperating with the plate to be actuated when the distance between the plate and the switch member becomes less than a selected value, the improvement comprising: a second electronic proximity switch member disposed at the side of said diaphragm facing away from said first electronic proximity switch member, said second proximity switch member cooperating with said plate to be actuated when the distance between said plate and said second member becomes less than a selected value; and means supporting said first and second electronic proximity switch members for movement as a unit relative to said diaphragm in the direction of their axes in a manner to maintain the spacing therebetween in such axial direction constant.

4,211,936
CCD GATE ELECTRODE STRUCTURES AND SYSTEMS EMPLOYING THE SAME

Walter F. Kosonocky, Skillman, and Donald J. Sauer, Plainsboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,208
Int. Cl.[2] G11C *19/28;* H03K *5/00;* H01L *29/78*
U.S. Cl. 307—221 D 16 Claims



1. A charge-coupled device (CCD) comprising:
a semiconductor substrate formed with first and second

CCD channels therein, said channels being defined by potential barriers in said substrate;

a first gate electrode insulated from the substrate and extending over both channels, said electrode being formed with an opening therein over said first channel;

a second gate electrode located over said opening for controlling the substrate potential of said first channel through said opening, said second gate electrode being shielded from said second channel by said first gate electrode;

means for applying a bilevel control voltage to said second gate electrode, one of said levels creating a potential barrier in said first channel through said opening in said first gate electrode for preventing the passage of charge in said first channel past said opening, and the other of said levels creating a potential well in said first channel through said opening in said first gate electrode for the storage of charge in the substrate region adjacent to said opening;

a second opening in said first gate electrode, said second opening being over said second channel;

a third gate electrode over said second opening for controlling the substrate potential of said second channel through said second opening, said third gate electrode being shielded from said first channel by said first gate electrode; and

means for applying a bilevel control voltage to said third gate electrode, one of said levels creating a potential barrier in said second channel through said second opening in said first gate electrode for preventing the passage of charge in said second channel past said second opening, and the other of said levels creating a potential well in said second channel through said second opening in said first gate electrode for the storage of charge in the substrate region of said second channel adjacent to said second opening.

4,211,937

MULTI-CHANNEL CHARGE COUPLED TRANSFER DEVICE

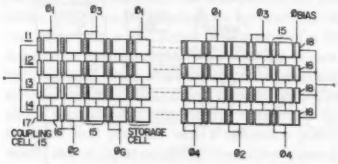
Susumu Kohyama, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 761,966, Jan. 24, 1977, abandoned. This application Oct. 27, 1978, Ser. No. 955,212

Claims priority, application Japan, Jan. 23, 1976, 51-586851; Mar. 8, 1976, 51-2421451; May 7, 1976, 51-5206251; May 10, 1976, 51-5214551; Aug. 2, 1976, 51-9220551

Int. Cl.[2] **G11C** *19/28;* **H03K** *5/00;* **H01L** *29/78*

U.S. Cl. 307—221 D **9 Claims**



1. A charge transfer device comprising:

a semiconductor substrate of one conductivity type;

an insulation layer formed on said substrate;

N charge transfer channels arranged in parallel and having inputs connected to a common input node formed in said substrate and outputs to a common output node formed in said substrate and each channel including P transfer electrodes disposed on said insulating layer in a charge transfer direction, the N corresponding transfer electrodes of the respective charge transfer channels being arranged in the direction normal to the charge transfer direction and being electrically connected together;

means for forming a potential barrier in part at the charge incoming side of said semiconductor substrate under each of only M (<P) successive transfer electrodes of each of said N charge transfer channels in response to application of a potential of a storage level to the transfer electrode to form a storage cell under each of said M electrodes of each of said charge transfer channels for storing a signal charge packet, the N sets of said respective M transfer electrodes under which said potential barriers are to be formed being arranged such that the first electrodes of said respective M successive transfer electrodes are successively displaced by one transfer electrode in the charge transfer direction at the input side of said charge transfer channels and the last electrodes of said respective M successive transfer electrodes are successively displaced by one transfer electrode in the charge transfer direction at the output side of said charge transfer channels, and said storage cell being responsive to application of a potential of a transfer level on the associated transfer electrode to receive a signal charge packet from the adjacent preceding cell at the storage level;

means for applying N-phase non-overlapping offset clock pulse signals to said transfer electrodes of said N charge transfer channels, said clock pulse signals each being normally biased to the storage level and pulsed to the transfer level in order that N successive transfer electrodes in each of said charge transfer channels are successively set to the transfer level in the direction opposite to the charge transfer direction whereby input data from said input node are sequentially applied to said N transfer channels and parallel data from said charge transfer channels are applied sequentially to said output node by said N-phase clock signals and, in each of said charge transfer channels, a signal charge packet is shifted one storage cell in the charge transfer direction during one cycle period of said N-phase clock pulse signals while an empty storage cell is shifted one cell position in the direction opposite to the charge transfer direction each time a clock signal is pulsed; and,

means for forming a fat "O" potential barrier in part at the charge incoming side of said semiconductor substrate under each of transfer electrodes disposed between said input node and the first electrode of said respective M successive transfer electrodes of said charge transfer channels to store a fat "O" charge under the associated transfer electrode.

4,211,938

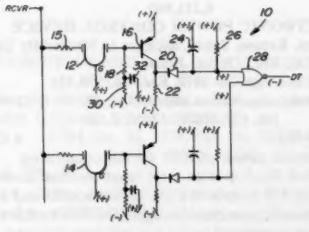
TONE DETECTOR

Duane R. Bolgiano, Bala Cynwyd; Joel M. Benjamin, Jr., Pottstown, and Victor Meyer, Jr., Telford, all of Pa., assignors to International Mobile Machines Incorporated, Bala Cynwyd, Pa.

Division of Ser. No. 755,615, Dec. 29, 1976, Pat. No. 4,130,731. This application Oct. 16, 1978, Ser. No. 951,734

Int. Cl.[2] **H03K** *9/06, 17/28*

U.S. Cl. 307—233 R **5 Claims**



1. A non-linear tone detector system comprising:

receiving means sensitive to at least one input frequency;

output means for providing an output in the form of turn-on and turn-off signals;

control means for controlling the output of said output means;

said control means being adapted to turn off the output means in the absence of a particular frequency or group of frequencies at said receiving means after a predetermined time period, and to turn on said output means after a predetermined time period in the presence of a particular frequency or group of frequencies at said receiving means;

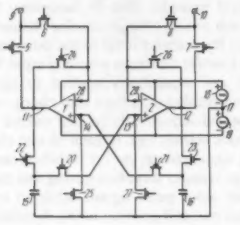
said time periods being determined by independent actuating means.

4,211,939

OPERATIONAL AMPLIFIER WITH SWITCHING ERROR ELIMINATION

Anatoly V. Furman, ulitsa Chkalova, 21, kv. 6, Zhukovsky Moskovskoi oblasti, U.S.S.R.

Filed Mar. 9, 1978, Ser. No. 885,022
Int. Cl.[2] G06G 7/12
U.S. Cl. 307—229 **6 Claims**



1. A switching device, comprising:

two identical active switching components connected in series and each comprising an operational amplifier having a negative feedback circuit, an inverting input, a non-inverting input, an output, supply sources, and a keying element in said negative feedback circuit;

two identical operational amplifier bias voltage memory circuits each having an input and an output; said input of each of said memory circuits being connected to said output of said operational amplifier; said output of each of said memory circuit being connected to said non-inverting input of said operational amplifier so that said output of the first memory circuit is connected to said non-inverting input of the operational amplifier with output connected said second memory circuit, said output of the second memory circuit being connected to said non-inverting input of the operational amplifier with output connected to said first memory circuit.

4,211,940

ELECTRONIC POWER CONTROL DEVICE

Shunji Minami, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 20, 1978, Ser. No. 898,186
Claims priority, application Japan, Apr. 27, 1977, 52-49569
Int. Cl.[2] H03K 17/60, 1/00
U.S. Cl. 307—251 **4 Claims**

1. An electronic power control device, comprising:

(a) a first R-S flip-flop with a set input terminal connected through an UP switch to a DC power source and a reset input terminal connected through a DOWN switch to said DC power source,

(b) a second R-S flip-flop with a set input terminal connected through first and second diodes to said set and reset input terminals of said first R-S flip-flop and a reset input terminal connected through a STOP switch to said DC power source,

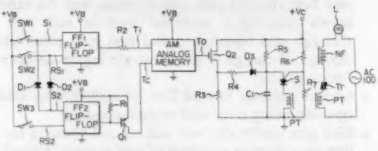
(c) an analog memory comprising

an input resistor with one end connected to an output terminal of said first R-S flip-flop,

an analog switch one end of which is connected to the other end of said input resistor and which is enabled or disabled in response to the output from said second R-S flip-flop,

a nonpolarized capacitor interconnected between the other end of said analog switch and the ground, and

a MOS field-effect transistor with the gate connected to said other end of said analog switch, the drain connected to A DC power source and the source connected to an output terminal and connected to a source of reference potential through an output resistor,



(d) a firing circuit coupled to said analog memory output terminal and connected in series with a control resistor and a firing capacitor, and means for interconnecting said firing circuit between a source of reference potential and a generally trapezoidal waveform power source in such a way that said firing circuit may be fired or rendered conductive in response to a predetermined level of voltage charged across said firing capacitor, and

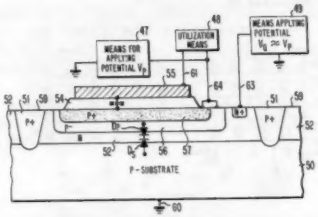
(e) a semiconductor device for controlling the level of voltage charged across said firing capacitor in response to the output from said analog memory.

4,211,941

INTEGRATED CIRCUITRY INCLUDING LOW-LEAKAGE CAPACITANCE

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 3, 1978, Ser. No. 930,791
Int. Cl.[2] H01L 27/04, 29/94
U.S. Cl. 307—303 **3 Claims**



1. An integrated circuit including a low-leakage capacitance comprising:

a semiconductor substrate of a first conductivity type material;

a first supply terminal for receiving a reference potential;

means providing ohmic contact between said semiconductor substrate and said first terminal;

an MOS parallel plate capacitor having as its first plate a first electrode, having as its second plate a first semiconductor region of said first conductivity type with an ohmically contacting second electrode, and having a dielectric layer between its first and second plates, and having a second semiconductor region of a second conductivity type com-

plementary to said first conductivity type, which second semiconductor region having an ohmically contacting third electrode and forming first and second isolating pn junctions, respectively, with said first semiconductor region and said substrate;

means connected to the first and second electrodes of said MOS capacitor for utilizing the capacitance therebetween;

means for causing a determinable potential, different from said reference potential, at said second electrode;

means for applying to the third electrode of said MOS capacitor a similar valued potential to said determinable potential thereby to eliminate a potential across said first pn junction and forestall appreciable leakage current through said first junction which means includes,

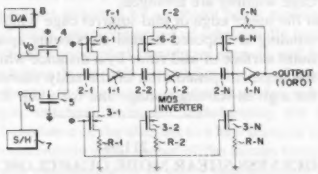
means exclusive of said first pn junction for supplying leakage current flow across said second pn junction.

4,211,942

VOLTAGE COMPARATOR PROVIDED WITH CAPACITIVELY CASCADE-CONNECTED INVERTING AMPLIFIERS

Kazuhide Aoki, and Kenji Kawagai, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 18, 1978, Ser. No. 925,801
Claims priority, application Japan, Jul. 18, 1977, 52-85869
Int. Cl.[2] H03K *5/20, 17/60*
U.S. Cl. 307—355 **3 Claims**



1. A comparator for comparing a first input voltage signal with a second input voltage signal to provide at an output thereof an output signal of a logic level 1 or 0 depending on the relationship between magnitudes of the first and second input voltage signals comprising:

a plurality of capacitively cascade-connected inverting amplifier stages each including an inverter having an input and an output, a first series connection of a first resistive impedance element and a first switching device connected between said input and output of said inverter, a second series connection of a second resistive impedance element and a second switching device connected between said input of said inverter and a reference potential circuit point, and an input-coupling capacitive element connected to said input of said inverter, said first and second switching devices of said first and second series connections being simultaneously enabled or disabled at a predetermined time interval by a clock pulse signal applied thereto; and

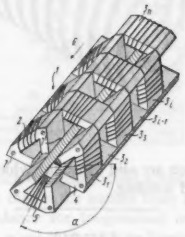
input circuit means for alternately coupling the first and second input voltage signals to an input-coupling capacitive element of a first inverting amplifier stage, said input circuit means being arranged to couple the first input voltage signal to said input-coupling capacitive element of said first inverting amplifier stage when said first and second switching devices are enabled, and to couple the second input voltage signal to said input coupling capacitive element of said first inverting amplifier stage when said first and second switching devices are disabled.

4,211,943

LINEAR INDUCTION MOTOR

Alexandr D. Popov, ulitsa Koroleva, 12, kv. 154; Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu, and Dmitry A. Zvezdunov, ulitsa Estonskaya, 248-b, Bataisk Rostovskoi oblasti, all of U.S.S.R.

Filed May 8, 1979, Ser. No. 37,012
Claims priority, application U.S.S.R., May 10, 1978, 2618796
Int. Cl.[2] H02K *41/00*
U.S. Cl. 310—13 **1 Claim**



1. A linear induction motor comprising:

an inductor;

an electrically conducting secondary element disposed within said inductor and separated from the latter by an air gap;

said inductor including a multiphase concentrated winding and a magnetic circuit;

said magnetic circuit including groups of laminated cores;

each of said groups of laminated cores, including at least three laminated cores which have an inverted U-shape and are comprised of two legs coupled by a yoke;

said laminated cores whose lamination are located perpendicularly to the direction of movement of the magnetic field so as to establish a closed magnetic flux;

axes of symmetry of said laminated cores of each of said groups, positioned in a plane perpendicular to the direction of movement of the magnetic field and shifted with respect to one another by a given angle α;

said legs of said laminated cores of a subsequent group, mating said legs of said laminated cores of a preceding group so as to provide for even distribution of the magnetic field within said inductor;

said axes of symmetry of said laminated cores of a subsequent group, shifted with respect to the axes of symmetry of the laminated cores of a preceding group by an angle $\alpha/2$.

4,211,944

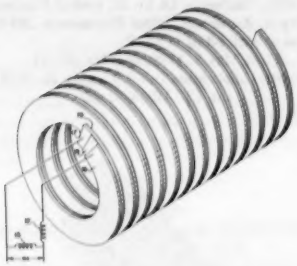
AMORPHOUS METAL ELECTRIC MOTOR WITH INTEGRAL CAPACITOR

Theodore R. Haller, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,444
Int. Cl.[2] H02K *11/00*
U.S. Cl. 310—72 **12 Claims**

1. An electric machine comprising: a stator and a rotor mounted for relative rotation at least one of which has a laminated magnetic core that has a dual function as a capacitor and is constructed of multiple insulated turns of magnetic amorphous metal ribbon of relatively long length; an energizing winding on and magnetically coupled with said laminated

core; at least part of said winding also being electrically connected to the ribbon such that said insulated turns of amor-



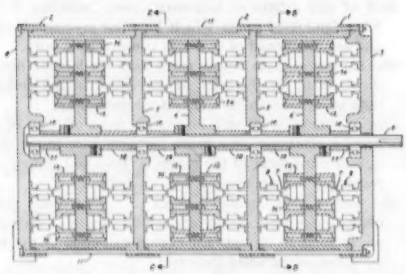
phous metal ribbon are said capacitor which is in circuit relationship with said winding.

4,211,945

MULTI-VOLTAGE AND MULTI-FREQUENCY ALTERNATOR/GENERATOR OF MODULAR CONSTRUCTION

Ian S. Tawse, Weston, Canada, assignor to Gen-Tech, Inc., Cape Coral, Fla.

Filed Oct. 20, 1977, Ser. No. 843,936
Int. Cl.[2] H02K *21/10*
U.S. Cl. 310—112 **6 Claims**



1. An alternator/generator of modular construction, comprising:

(a) a plurality of stator plates located in spaced-apart parallel planes, each stator plate carrying a series of pole pieces having fingers, said fingers carrying electrical output coils,

(b) a rotor disc located between, and parallel to, each two successive stator plates, each rotor disc carrying a series of field magnets cooperable with said output coils carried by adjacent stator plates, the number of said field magnets on each face of a rotor disc being equal to the number of said pole piece fingers on an opposite face of an adjacent stator plate, and each of the field magnets carried on each face of said rotor disc being aligned in the axial direction of said shaft with one of said pole piece fingers on an opposite face of an adjacent stator plate when said rotor disc is in a stationary position,

(c) a rotatable shaft carrying all said rotor discs, said shaft passing through said stator plates,

(d) bearing means carried by the two endmost stator plates and by at least some of said stator plates between the endmost plates, said shaft being rotatably supported by said bearing means,

(e) a plurality of individual casing sections, one of said casing sections being between each two successive stator plates, and

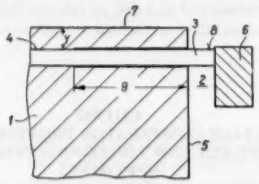
(f) means for securing said casing sections and stator plates together to define a housing enclosing all the rotor discs.

4,211,946

ASYNCHRONOUS ELECTRIC MACHINE

Joachim Eckert, and Franz Spirk, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,351
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1977, 2719326
Int. Cl.[2] H02K *17/20*
U.S. Cl. 310—212 **4 Claims**



1. In an asynchronous machine including a rotor of solid iron and a squirrel cage winding, the improvement comprising:

said rotor having closed slots of any cross-sectional shape enclosed within the iron in which the bars of said squirrel cage winding are arranged,

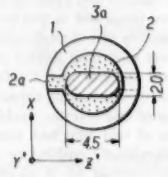
and the upper edge of said squirrel cage winding when said winding is disposed in said slots being spaced from the outer surface of said rotor by a distance which is equal to the depth of penetration of the eddy currents generated for a given starting voltage and for a slip $\geqq 0.8$.

4,211,947

THICKNESS-SHEAR MODE QUARTZ OSCILLATOR WITH AN ADDED NON-CIRCULAR MASS

Hitoshi Ikeno; Tetsuro Konno; Mitsuyuki Sugita, and Hirobumi Yanagi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Japan

Filed Feb. 8, 1978, Ser. No. 876,155
Claims priority, application Japan, Feb. 9, 1977, 52-13344
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—312 **21 Claims**



1. A thickness-shear mode quartz oscillator comprising: a thickness-shear mode quartz slice, driving electrodes formed on both surfaces of said quartz slice and an addition mass formed on at least one of said driving electrodes, the improvement wherein said addition mass has a non-circular shape and is suitably positioned so that the frequency f_O of the fundamental main vibration and the frequencies f_{ni} of a group of n-fold harmonics (where n is an odd number of 3 or more) always satisfy the following relation within the practical application ranges of temperature and load capacitance;

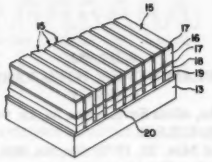
$f_0 \neq f_{ns}/n$.

4,211,948

FRONT SURFACE MATCHED PIEZOELECTRIC ULTRASONIC TRANSDUCER ARRAY WITH WIDE FIELD OF VIEW

Lowell S. Smith, Schenectady, and Axel F. Brisken, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,654
Int. Cl.² H01L 41/10
U.S. Cl. 310—322 **7 Claims**



1. An ultrasonic probe for use in steered beam imaging systems comprising:

a front surface matched linear transducer array for transmitting pulses of ultrasound with a preselected emission frequency along many radial scan lines to perform a wide angle sector scan with a total angle exceeding 60° and for detecting echoes reflected by an object being examined;

said matched array being comprised of substantially isolated and acoustically uncoupled transducer element and impedance matching layer unit assemblies each including a narrow element to which is secured at least one quarter-wavelength matching layer for transforming the high acoustic impedance of the element to a low acoustic impedance approximately equal to that of the human body, the element and matching layer in every unit assembly both having a width in the direction of the longitudinal axis of the array on the order of one wavelength or less at the ultrasound emission frequency whereby acoustic energy incident at any angle is guided through the matching layer to the element without being refracted; and

a continuous covering attached to the matching layer of all of said unit assemblies.

4,211,949

WEAR PLATE FOR PIEZOELECTRIC ULTRASONIC TRANSDUCER ARRAYS

Axel F. Brisken, Ballston Lake, and Lowell S. Smith, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

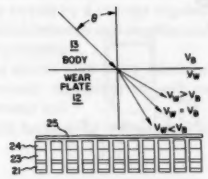
Filed Nov. 8, 1978, Ser. No. 958,655
Int. Cl.² H01L 41/10
U.S. Cl. 310—322 **2 Claims**

1. A medical ultrasonic probe for use in a steered beam imaging system comprising:

a front surface matched linear transducer array comprised of narrow piezoelectric transducer elements to each of which is secured at least one quarter-wavelength impedance matching layer, every element and its associated matching layer having a width in the direction of the longitudinal axis of the array on the order of one wavelength or less at the ultrasonic emission frequency, said elements and associated matching layers being substantially acoustically isolated from one another;

said transducer array transmitting acoustic pulses along many radial scan lines to perform a wide angle sector scan with a total angle exceeding 60° and detecting echoes reflected by body structures;

a continuous wear plate attached to said impedance matching layers and giving mechanical support to said transducer array, said wear plate contacting the human body during an ultrasound examination and consisting of a



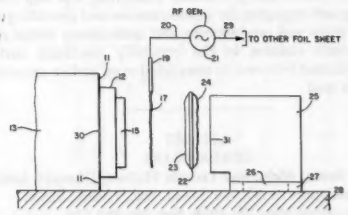
material in which the longitudinal sound velocity is equal to or less than that in the human body and in which the acoustic impedance for longitudinal acoustic waves is approximately equal to that of the human body, whereby any refraction of acoustic waves that occurs enhances the field-of-view of said transducer elements.

4,211,950

ARRANGEMENT FOR COUPLING RF ENERGY INTO PIEZOELECTRIC TRANSDUCERS

Edward V. Roos, Cocoa Beach, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Sep. 13, 1978, Ser. No. 941,910
Int. Cl.² H01L 41/10
U.S. Cl. 310—327 **14 Claims**



1. An arrangement for coupling energy into a transducer comprising:

a transducer electrode disposed on a surface of said transducer by way of which electrical energy is applied to said transducer to cause said transducer to generate an output in accordance therewith;

first means, coupled to said transducer electrode, for imparting to said electrode and electric field uniformly distributed over substantially the entire area of contact between said transducer electrode and said transducer;

second means, coupled to said first means, for removing thermal energy away from said transducer; and

third means, disposed between said first means and said second means, for electrically insulating said first means from said second means and thermally coupling said first means to said second means, while effectively impeding the transfer of the output of said transducer in the direction of the removal of thermal energy via said second means.

4,211,951

SHEAR TYPE PRESTRESSED PIEZOELECTRIC FORCE TRANSDUCER

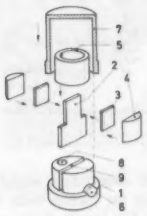
Joergen Jensen, Gentofte, Denmark, assignor to Bruel & Kjaer A/S, Naerum, Denmark

Continuation of Ser. No. 780,456, Mar. 23, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,060

Claims priority, application Denmark, Mar. 29, 1976, 1369/76

Int. Cl.² H01L *41/10*

U.S. Cl. 310—329 **4 Claims**



1. An electromechanical force transducer comprising: a base including a base piece and a rectangular stud, having opposed flat faces, fixed in the base piece; a plurality of shear sensitive transducing elements, with flat faces, and associated seismic masses, with flat faces, fixed to the opposing faces of the stud by means of a clamping force directed toward the axis of the stud, the flat faces of said measuring elements being disposed in planar abutment with associated said flat faces of said seismic masses and said stud, said measuring elements being subjected to shear by the forces to be measured, thereby displaying a change in electrical charge, voltage, current, or impedance; said stud having a rectangular cross-section and press fit into a complementary recess in the base piece, the part of the stud fixed in the base piece being wider but of the same thickness as the part of the stud carrying the measuring elements; all of the surfaces of said abutting flat faces of the stud, the elements and the seismic masses being precisely machined; and clip means embracing and engaging the seismic masses and providing said clamping force and sandwiching and maintaining under even pressure each element in flat precisely machined surface contact with and between its associated mass and an associated face of the stud.

4,211,952

SPARK PLUG

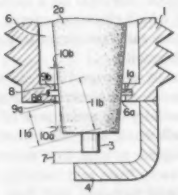
Toshiharu Iwata, Aichi, and Tadashi Hattori, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 28, 1978, Ser. No. 891,126

Claims priority, application Japan, Apr. 7, 1977, 52/40127; Apr. 11, 1977, 52/41236

Int. Cl.² H01T *13/20*

U.S. Cl. 313—143 **7 Claims**



1. In a spark plug having a metal plug body, an insulator fixedly positioned inside said plug body through the intermediary of a packing, a center electrode fixedly mounted in a leg portion of said insulator and disposed for exposure to the inside of an engine combustion chamber, and a ground electrode fixed to one end of said plug body and having one end thereof positioned opposite to said center electrode whereby a spark gap is provided between said ground electrode and said center electrode, the improvement wherein:

a space opening at one end thereof to said combustion chamber is defined by said plug body, said packing and said leg portion of said insulator, and restricting means having an annular groove is provided to form a plurality of restriction gaps between said plug body and said leg portion in the vicinity of the open end of said space to restrict entry of air-fuel mixture, said restriction gaps each being smaller than said spark gap.

4,211,953

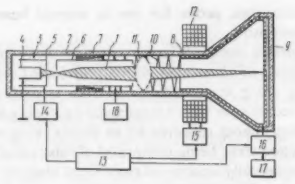
ELECTRON BEAM DEVICE WITH VARIABLE BEAM ENERGY

Sergei A. Rybalko, ulitsa Sovetskaya, 8a, kv. 94, Fryazino Moskovskoi oblasti, U.S.S.R.

Filed Mar. 20, 1978, Ser. No. 888,563

Int. Cl.² H01J *29/56, 29/62*

U.S. Cl. 313—450 **1 Claim**

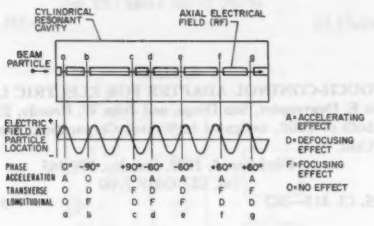


1. An electron beam device with variable electron beam energy comprising: a sealed casing; an electron source in said sealed casing for shaping an electron beam; a luminescent screen in said sealed casing; focusing means arranged within the sealing casing for maintaining an optimal diameter of said electron beam in the plane of said screen with changes in the energy of electrons of said electron beam; an accelerating electrode of said focusing means including an input aperture for also shaping said electron beam and arranged across the path of said electron beam, after said electron source; a first electrode of said focusing means arranged across the path of said electron beam, after the input aperture of said accelerating electrode, and electrically coupled to said accelerating electrode; a second electrode of said focusing means, said second electrode being axially symmetrical with said first electrode and arranged across the path of said electron beam, after said first electrode, and electrically coupled to said screen; a gap in said focusing means to form a variable focal power lens ensuring adequate compensation for the influence of changes in the energy of the electrons of said electron beam on the diameter of said electron beam in the plane of said screen, said gap being located between said accelerating electrode and the second electrode of said focusing means; and means for producing a distributed electric field, made from a resistive material, interposed between said first and second electrodes of said focusing means, and electrically connected to said first and second electrodes; said accelerating electrode having two end faces at least one of which, facing said screen, is interposed between said first and second electrodes, within a portion of said electron beam's path, confined by resistance magnitudes of 1/25 to 5/6 of the total resistance to electric current of said means for producing a distributed electric field, and forms, together with said first and second electrodes, said lens of variable focal power.

4,211,954
ALTERNATING PHASE FOCUSED LINACS

Donald A. Swenson, Los Alamos, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 5, 1978, Ser. No. 912,785
Int. Cl.[2] H01J *25/10*
U.S. Cl. 315—5.41 1 Claim


CYLINDRICAL RESONANT CAVITY
AXIAL ELECTRICAL FIELD (RF)
BEAM PARTICLE
a b c d e f g
ELECTRIC FIELD AT PARTICLE LOCATION
A=ACCELERATING EFFECT
D=DEFOCUSING EFFECT
F=FOCUSING EFFECT
O=NO EFFECT
PHASE 0° -90° +90° -60° -60° +60° +60°
ACCELERATION A O O A A A A
TRANSVERSE O D F D D F F
LONGITUDINAL O F D F F D D
a b c d e f g

1. A linear accelerator structure comprising:

an evacuated tank structure;

radiofrequency generating means for providing a standing wave in said evacuated tank structure;

particle injection means for injecting a beam of charged particles into said evacuated tank structure;

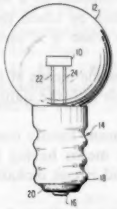
a plurality of spaced apart drift tubes, adjacent halves of said drift tubes and the gaps therebetween forming cells aligned to cooperate with said beam of charged particles, the length of said cells being asymmetric and varying periodically with respect to the wavelength of the starting wave in said tank structure; and,

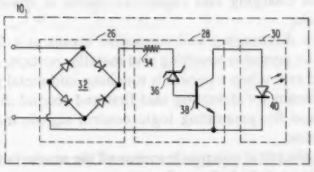
spacing said gaps successively at standing wave phase angles of 0°, −90°, +90°, −60°, −60°, +60° and +60°, respectively.

4,211,955
SOLID STATE LAMP

Stephen W. Ray, 616 Graydon Ave., Apt. 4, Norfolk, Va. 23507

Filed Mar. 2, 1978, Ser. No. 882,727
Int. Cl.[2] H05B *43/00*
U.S. Cl. 315—53 2 Claims





1. An area-illuminating solid state lamp comprising:

a light-diffusing encasement having a standard incandescent lamp base generally in the form of a cylinder;

a pair of electrical conductors whose lower ends are electrically secured to said base and whose upper ends extend into said encasement and mechanically support a discrete light-emitting solid state device;

said solid state device comprises an integrated circuit chip having a diode rectifier circuit, a plurality of series-interconnected light emitting diodes electrically coupled to said rectifier circuit by a voltage regulator circuit electrically connected between said rectifier and said plurality of light-emitting diodes;

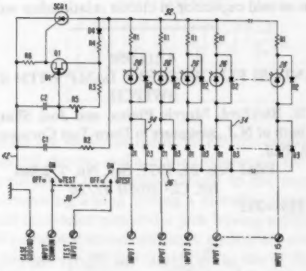
said integrated circuit chip being electrically connected to and mechanically supported on said conductors within said encasement; and

said encasement being solid translucent plastic.

4,211,956
LIGHT INDICATING SYSTEM HAVING LIGHT EMITTING DIODES AND POWER REDUCTION CIRCUIT

Jon A. Bloyd, Dayton, Ohio, assignor to Aero-Metric General, Inc., Dayton, Ohio

Filed Oct. 14, 1977, Ser. No. 842,410
Int. Cl.[2] H05B *43/00, 41/392*
U.S. Cl. 315—208 8 Claims



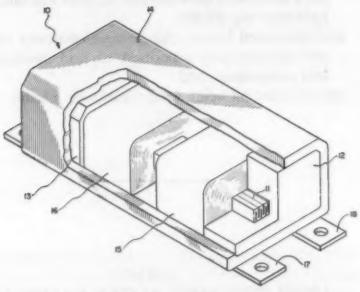
1. A light indicating system adapted for monitoring remotely controlled devices operated by alternating current electrical power, said system comprising a support panel, a plurality of light emitting diodes supported by said panel, a terminal block having a corresponding plurality of contacts for connecting each light emitting diode to a corresponding electrically controlled device to be monitored, rectifying means including a silicon controlled rectifier connected by a common conductor to all of said light emitting diodes, said rectifying means being effective to rectify the alternating current power received from each device into direct current power and for supplying the direct current power to the corresponding light emitting diode, each of said light emitting diodes being connected through a corresponding resistor to said common conductor for limiting the direct current through the light emitting diode, each of said light emitting diodes being connected to the corresponding said contact through a corresponding diode, and voltage phase control means for limiting conduction of the retified current through each said light emitting diode and the corresponding said resistor for limiting the power and the corresponding heat produced by the resistor.

4,211,957

AMORPHOUS METAL LAMP BALLAST HAVING A CAPACITOR INTEGRAL WITH THE MAGNETIC CORE

Robert P. Alley, Manlius; Theodore R. Haller, Schenectady, and Russell E. Tompkins, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 31, 1979, Ser. No. 7,918
Int. Cl.² H05B *41/16*
U.S. Cl. 315—276 **14 Claims**



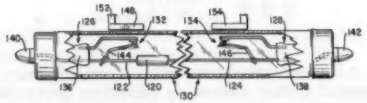
1. A magnetic lamp ballast comprising: a laminated magnetic core at least part of which has a dual function as a capacitor and is comprised of magnetic amorphous metal ribbon and associated dielectric layers that are assembled to be a continuous magnetic structure with alternating laminations and dielectric, at least one coil mounted on and magnetically coupled with said core, said coil being electrically connected to the amorphous metal ribbon separated by dielectric layers which functions as said capacitor in circuit relationship with said soil.

4,211,958

PHANTOM FLUORESCENT LAMP WITH SAFETY SWITCH

Elwood D. Bickford, Morris Plains, and Joel Shurgan, Westwood, both of N.J., assignors to Duro-Test Corporation, North Bergen, N.J.

Filed Feb. 28, 1977, Ser. No. 772,844
Int. Cl.² H05B *41/16*
U.S. Cl. 315—312 **16 Claims**



1. A safety device for a phantom fluorescent lamp which is adapted to be connected between a pair of spaced electrical voltage supply terminals of a series circuit comprising:

a lamp envelope in the form of a fluorescent lamp and having electrical contact means at each end thereof and electrical conducting means having first and second ends each electrically connected to a respective one of said pair of electrical contact means, each electrical contact means at a respective end of said envelope adapted to be connected to a respective one of said spaced terminals for completing said series circuit; and

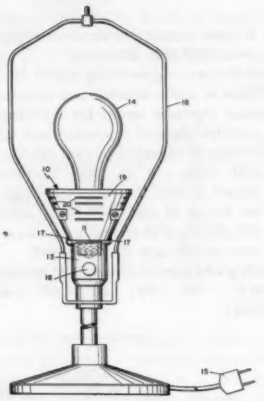
switching means located internally of the envelope and connected to said electrical conducting means interjacent said first and second ends for rendering said conducting means discontinuous when either of said electrical contact means at said ends of said envelope is not connected to a respective one of said spaced terminals and to render said conducting means continuous when each of said electrical contact means is electrically connected to a respective one of said spaced terminals.

4,211,959

TOUCH-CONTROL ADAPTER FOR ELECTRIC LAMPS

Joe E. Deavenport, San Diego, and John W. Roorda, El Cajon, both of Calif., assignors to Westek Corporation, San Diego, Calif.

Filed Sep. 5, 1978, Ser. No. 939,363
Int. Cl.² G05F *1/00*
U.S. Cl. 315—362 **9 Claims**



1. A control module adapter, to be used with any standard electric lamp having a metallic exterior portion, for turning said lamp on or off in response to a mere touching of said portion and for controlling by touch the brightness of light emitted from said lamp when it is turned on, said module comprising;

a male electrical receptacle means of the screw-in type for screwing said module into the light bulb socket on said lamp:

electronic mounting means fixedly connected to said male electrical receptacle means having an electronic circuit mounted thereon; said circuit including

a capacitive means,

coupling means for mechanically and electrically coupling said capacitive means to said metallic portion whenever said module is screwed into said light bulb socket;

means for charging said capacitive means at spaced apart intervals;

means for discharging said capacitive means at a first rate when no person is touching said metallic portion, and at a second rate when a person is touching said metal portion;

control means for detecting said first and second discharge rates and for generating logic control signals indicating said rates;

a female electrical receptacle means of the screw-in type for receiving a light bulb, and

means for switching predetermined portions of power received from said male electrical receptacle means to said female electrical means in response to said control signals.

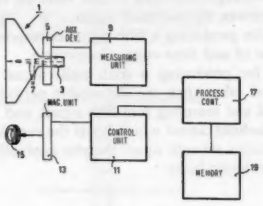
4,211,960
METHOD OF MANUFACTURING A STATIC CONVERGENCE UNIT, AND A COLOR DISPLAY TUBE COMPRISING A CONVERGENCE UNIT MANUFACTURED ACCORDING TO THE METHOD

Piet G. J. Barten, and Jan Bijma, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 668,487, Mar. 19, 1976. This application Oct. 7, 1977, Ser. No. 840,271

Int. Cl.[2] H01J *29/70, 29/76*

U.S. Cl. 315—368 11 Claims



1. A method of producing a magnetic convergence structure for the static convergence of electron beams which extend approximately in one plane in a neck of a color display tube of the kind in which the neck merges into a flared portion adjoined by a display screen, said method comprising providing around the neck of the color display tube an auxiliary device for generating variable magnetic fields in the neck of the color display tube, activating the color display tube, adjusting the auxiliary device to produce a magnetic field for converging the electron beams, determining from data derived from the adjustment of the auxiliary device the extent and the direction of the convergence error of each electron beam, and using such data to determine the polarity and the intensity of magnetic poles of said magnetic convergence structure for generating a permanent multi-pole static magnetic field for the correction of the convergence errors occuring in the color display tube.

4,211,961
CONTROL CIRCUIT FOR USE IN CONTROL OF CURRENT SUPPLY FOR ELECTRIC MOTOR WITH IMPROVED DUTY CONTROLLING OSCILLATOR CIRCUIT, PARTICULARLY FOR ELECTRICAL VEHICLE

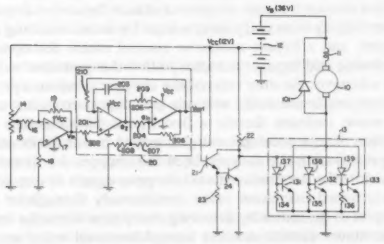
Katsuji Marumoto, and Tsutomu Omae, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 15, 1978, Ser. No. 915,582

Claims priority, application Japan, Jun. 15, 1977, 52-69903

Int. Cl.[2] H02P *5/00*

U.S. Cl. 318—139 10 Claims



1. A control circuit for controlling supply of current for an electric motor, having a battery for producing an output and a control voltage; a chopper circuit series connected with said battery and for supplying current for the electric motor; means for producing a command signal from dividing the control voltage from said battery; a duty controlling oscillator circuit for generating an output signal on the basis of the command signal from said command signal producing means, by which the duty of the current supplied for the electric motor is determined, and a driving pulse generator for generating a driving pulse in response to the output signal from said duty controlling oscillator circuit, thereby the ON-OFF operation of said chopper circuit being controlled, wherein said duty controlling oscillator circuit comprises an integrator for integrating the command signal from said command signal producing means, a hysteresis comparator for comparing the integrated output from said integrator to a reference produced from dividing the control voltage from said battery and a feedback provided between the output of said hysteresis comparator and the input of said integrator.

4,211,962
BRUSHLESS D-C MOTOR

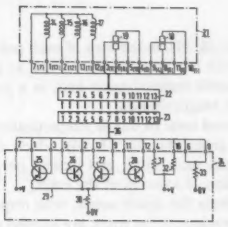
Hans Grünleitner, Nuremberg; Georg Kögler, Schwabach; Hans Köhnlein, and Peter Tschirner, both of Nuremberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 20, 1977, Ser. No. 862,421

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1976, 2659233

Int. Cl.[2] H02K *23/00*

U.S. Cl. 318—254 29 Claims



1. A brushless d-c motor including an electric commutation circuit connected thereto and a mating connector for electrically inter-connecting the electric circuit to the motor, the connector comprising a plug having a plurality of symmetrically disposed connector pins and a jack having a plurality of symmetrically disposed connector jacks, each of the connector pins being uniquely electrically connected to one of the motor and the circuit and each of the connector jacks being uniquely electrically connected to the other of the motor and the circuit, the connector pins and the connector jacks being arranged and each of the connector pins and each of the connector jacks being electrically connected to the motor and circuit so that the plug and jack may be connected in only two configurations, one of the two configurations providing rotation of the motor in one direction and the other of the two configurations providing rotation of the motor in the opposite direction.

4,211,963
BRUSHLESS, PERMANENT MAGNET D-C PULSE CURRENT CONTROLLED, ESSENTIALLY UNIFORM TORQUE DYNAMO ELECTRIC MACHINE, PARTICULARLY MOTOR

Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Jun. 27, 1978, Ser. No. 919,702

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1977, 2730142

Int. Cl.[2] H02K *29/02*

U.S. Cl. 318—254 30 Claims

1. Brushless d-c motor having

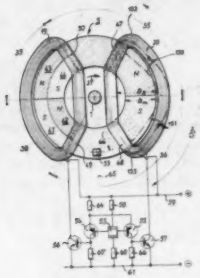
a stator winding comprising two winding means (**19, 20; 75–78; 104, 105; 110–113**);

a permanent magnet rotor having a plurality of poles (**6, 91**) located in electromagnetic induction relation to the stator winding means;

current switching control means (**56, 67**) alternately controlling current flow through the respective winding means;

sensing means (**53**) responsive to the position of the rotor with respect to the sensing means, connected to and controlling the switching state of the current switching control means and hence pulsed current flow through the respective winding means;

wherein, in accordance with the invention,



the rotor (**6, 91**), in the area of each pole pitch and interacting with the winding means has, in a first angular zone, monopole magnetization and, in a second angular zone, dipole magnetization;

said second zone of dipole magnetization having two angular regions (**41, 42; 43, 44**) which are located radially adjacent each other and extend perpendicularly to the direction of rotation of the rotor;

and wherein the dipole zones, with respect to adjacent pole pitch regions of the rotor, are located adjacent each other,

whereby the permanent magnet rotor will be essentially continuously magnetized throughout its circumference with said angular first zones of one magnetic polarity and adjacent angular second zones of dual magnetic polarity.

4,211,964

SPEED CONTROL CIRCUIT

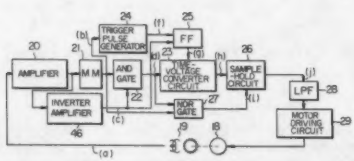
Toshiomi Yabu, Shimohonnojimaemachi; Tatsuo Wada, Osaka; Kouichi Yamada, Higashiosaka, and Tadashi Yoshino, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 29, 1979, Ser. No. 7,247

Claims priority, application Japan, Jan. 31, 1978, 53-10100; May 12, 1978, 53-56918; May 24, 1978, 53-62735

Int. Cl.[2] H02P *5/16*

U.S. Cl. 318—314 **8 Claims**



1. A speed control circuit for a rotating body comprising:

means for producing a first signal in response to the rotation of said rotating body,

a monostable multivibrator circuit adapted to be triggered by a front edge of said first signal to produce an output signal having a prescribed metastable period,

means for producing a second signal in response to the output signal of said monostable multivibrator circuit,

means for producing a third signal in response to a logical AND of an inverted signal of said first signal and said second signal,

a flip-flop circuit set in response to the front edge of said second signal and reset by a signal related to the rear edge of said first signal,

means for producing a fourth signal in response to the output signal of said flip-flop circuit,

a time-voltage converter circuit reset by said fourth signal and driven by said third signal,

means for producing a fifth signal in response to the output signal of said time-voltage converter,

means for producing a sixth pulse signal appearing in a period other than the metastable period of said second signal and sampling said fifth signal, and

a sample-hold circuit which holds the sampled fifth signal to produce a seventh signal thereby controlling the speed of said rotating body.

4,211,965

DEVICE FOR CONTROLLING ROTATIONAL SPEED OF ELECTRIC MOTOR

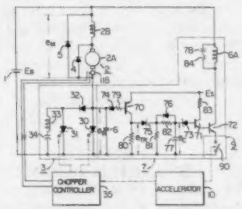
Jin-Ichi Toyama, Katsuta, and Masaki Kawai, Yokohama, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 25, 1977, Ser. No. 800,536

Claims priority, application Japan, Jun. 2, 1976, 51-63528

Int. Cl.[2] H02P *7/06*

U.S. Cl. 318—341 **8 Claims**



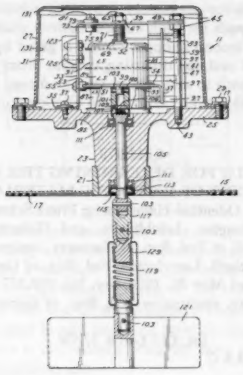
1. A device for controlling the speed of an electric motor, comprising a chopper connected between a power source and an electric motor; an accelerator; means for detecting the current through said motor; a controller for controlling the duty ratio of said chopper in accordance with the degree of actuation of said accelerator and said current through said motor and for controlling said current through said motor within a restricted range; a bypass contacor for connecting said motor directly with said power source by short-circuiting said chopper; and a bypass contactor control means for opening and closing said bypass contactor so that the contactor will be open whenever the duty ratio of the chopper is below a predetermined maximum value, wherein said bypass contactor control means includes therein a first means for detecting full actuation of said accelerator and a second means for continuously monitoring the duty cycle of the chopper for detecting every time the duty ratio of said chopper equals or exceeds a predetermined maximum value continuously throughout the operation of the motor by detecting every time when the value of the motor current reaches a predetermined value corresponding to the predetermined duty ratio so that said bypass contactor will be closed when said accelerator is actuated to the full extent and when said duty ratio approximately equals said predetermined maximum value, and said bypass contactor will be open whenever said duty ratio of the chopper is below the predetermined maximum value.

4,211,966

LEVEL CONTROL SENSOR SWITCH MECHANISM

Donald B. Sweet, Carsonville, Mich., assignor to Material Control, Inc., Aurora, Ill.

Filed Dec. 27, 1978, Ser. No. 973,825
Int. Cl.[2] H01H *35/00*
U.S. Cl. 318—482 **19 Claims**



1. In a level control sensor switch mechanism mountable upon a bin containing bulk material of varying levels, having a mounting plate secured to said bin, a housing base having an apertured neck secured to said mounting plate and a hollow housing top mounted on and secured to said base defining a chamber, a low torque low speed electric motor having a longitudinal central axis, within said chamber having an output shaft parallel to said axis, a drive shaft aligned with and coupled to said output shaft journalled and supported through said neck extending through a wall of said bin, and a paddle on the end of said drive shaft continuously rotatable within said bin when free of said bulk material, and non-rotatable in said bulk material at a predetermined level thereof, stalling said motor;

the improvement comprising:

an adjustment bracket mounted upon said base, having an end plate spaced from said base;

first means on said base adjustably supporting said end plate;

a torsion spring adapter secured to said end plate;

stub means on said motor aligned with said output shaft projected into and journalled within said adapter for limited rotary movement;

a bracket secured to said motor and extending transversely of said axis, projecting from opposite sides of said motor and adapted for limited rotary movement with said motor in a plane at right angles to said axis;

time delay stop means adjustably mounted upon said adjustment bracket retainingly engaging one end of said motor bracket;

an extension arm on said bracket at right angles thereto;

a torsion spring on said adapter;

second means anchoring one end of said spring upon said adjustment bracket;

the other end of said spring biasing said bracket arm and motor into a normal first position with said bracket engaging said stop means, said output shaft and paddle freely rotating;

and upon stalling of said drive shaft, transferring its torque to said motor for rotating said motor and bracket and bracket arm to a second switch operating position against the action of said torsion spring;

and a switch means within sai chamber mounted on said housing base having a switch arm operatively engaged by said bracket arm when in said second position, adapted for controlling selectively the start and stop operations of conveyors, elevators, or feeders, and to provide audible or visual warning signals;

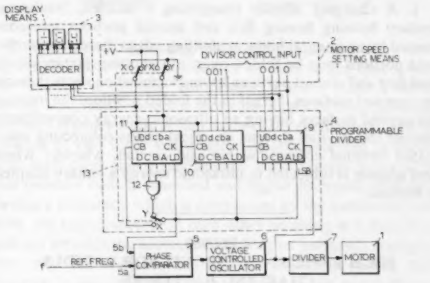
said motor bracket automatically returning to its first position when said paddle becomes disengaged from said bulk material and its motor is unrestricted.

4,211,967

MOTOR SPEED ADJUSTING APPARATUS

Ryo Akiyama, Sakai, and Yoshiaki Igarashi, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 21, 1978, Ser. No. 898,852
Claims priority, application Japan, Apr. 27, 1977, 52/49562; May 4, 1977, 52/51413
Int. Cl.[2] H02P *7/28*
U.S. Cl. 318—490 **9 Claims**



1. A motor speed adjusting apparatus comprising:

a motor speed setting means for generating a motor speed setting signal;

a programmable divider connected to said motor speed setting means, having an input and an output, for generating a division signal having a frequency which is the frequency of the signal applied to said input divided by an integral divisor, said divisor corresonding to said motor speed setting signal;

a reference signal generating means for generating a reference signal having a constant frequency;

a phase comparator connected to said programmable divider and said reference signal generating means for generating a d.c. signal corresponding to the phase difference between said division signal and said reference signal;

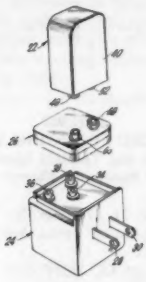
a voltage controlled oscillator connected to said phase comparator for generating an output signal having a frequency corresponding to said d.c. signal of said phase comparator, said output signal being applied to said input of said programmable divider and said output signal for application to a frequency controlled motor for control of the speed of the frequency controlled motor by the frequency thereof; and

a display means connected to said motor speed setting means for displaying an indication of said motor speed setting signal, whereby said divisor of said programmable divider is stepwise changeable by said motor speed setting signal from a standard number N (N being an integer) which corresponds to a nominal motor speed and said display means displays the rate of deviation of said divisor from said standard number N.

4,211,968
BATTERY CHARGER ADAPTER

Raymond K. Sugalski, Gainesville, Fla., assignor to General Electric Company, Worthington, Ohio

Filed Feb. 16, 1978, Ser. No. 878,453
Int. Cl.[2] H01M 10/46
U.S. Cl. 320—2 3 Claims

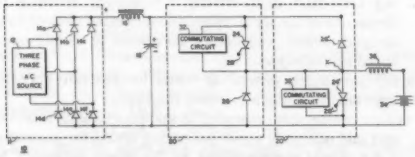


1. A charging adapter comprising a molded, insulating, unitary housing having first and second portions interconnected by an integral hinge at abutting edges thereof, whereby said portions may be folded over into abutting juxtaposition; said first and second portions having terminal contacts thereon on opposed surfaces thereof in the folded position, the interior juxtaposed surfaces having an ultrasonic energy concentrator thereof and cavities therein, electrical means connecting associated terminal contacts within said cavities, whereby when said adapter is subjected to ultrasonic energy a unitary adapter is formed.

4,211,969
HIGH EFFICIENCY CIRCUIT FOR RAPIDLY CHARGING BATTERIES

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,698
Int. Cl.[2] H02J 7/10
U.S. Cl. 320—14 8 Claims



1. An improved battery charger circuit for rapidly and efficiently charging a battery by providing periodic, substantially lossless battery discharge at a high rate for short intervals during the charging process, comprising:

(a) a DC current source;

(b) energy storage means coupled to said DC current source for alternately storing battery discharge energy during battery discharge intervals and for supplying battery charging current from stored battery discharge energy during selected charging time intervals;

(c) inductive means adapted for coupling to a battery to be charged for maintaining decreasing current conduction therethrough when connection to said DC source and energy storage means is interrupted;

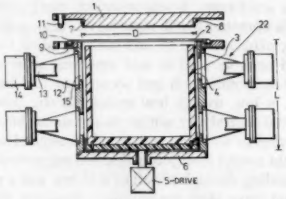
(d) a first chopper circuit coupling said inductive means to said current DC source and said energy storage means, said first chopper circuit responsive to external gate signals for conducting battery charge current therethrough from said DC current source and said energy storage means when said first chopper circuit is gated by an external gate signal for circulating said battery charge current during intervals other than when said first chopper circuit is gated by an external gate signal; and

(e) a second chopper circuit coupling said DC current source and said energy storage means to said inductive means, said second chopper circuit responsive to external gate signals for alternately providing a low loss battery discharge path for high current battery discharge pulses when said second chopper circuit is gated by an external gate signal and for diverting current from said battery discharge path to said energy storage means during intervals other than when said second chopper circuit is gated.

4,211,970
APPARATUS FOR DETERMINING THE WATER CONTENT OF ISOTROPIC MATERIALS

Hans G. Fitzky, Odenthal-Hahnenberg; Franz Schmitt, Cologne; Norbert Bollongino, Leichlingen, and Helmut Rehrmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 30, 1978, Ser. No. 910,557
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724959
Int. Cl.[2] G01R 27/04
U.S. Cl. 324—58.5 C 14 Claims



1. An apparatus for measuring the water content of electrically non-conductive powders, granulates, pastes and other isotropic materials, comprising a frequency-modulated microwave oscillator for supplying a frequency modulated microwave a closed cylindrical multimode measuring resonator receptive of the frequency modulated microwave, and dimensioned according to $0.5<D/L<2$ and $D>3\lambda$ where D is the diameter and L is the length of the resonator and λ is the microwave length to thereby be excitable in a plurality of modes a cylindrical sample container rotatably mountable about its cylindrical axis within the resonator and filling the volume thereof such that any annular gap therebetween is insufficient to produce interfering resonances therein and means for detecting the microwave transmitted through the resonator.

4,211,971
RATIO METER FOR CAPACITIVE-TYPE DISPLACEMENT CONVERTER

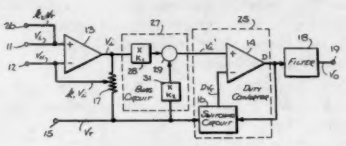
Tamotsu Kobayashi, and Sadaki Igarashi, both of Yokohama, Japan, assignors to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,180
Claims priority, application Japan, Jun. 30, 1977, 52/87463[U]
Int. Cl.[2] G01R 7/04; G06G 7/16
U.S. Cl. 324—140 D 3 Claims

1. A ratio meter to determine the ratio of a first input signal representing the difference between two variables and a second input signal representing the sum of these variables, said meter comprising:

A a span adjustment circuit responsive to the difference between the two variables to produce said first input signal;

B a bias circuit having an adder to one input of which is applied the product of the first input signal and a first constant and to another input of which is applied the product of the second input signal and a second constant to produce a biased output which is the sum of these products;



C a duty converter constituted by a comparator having a non-inverting input and an inverting input, and a switching circuit controlled by the duty pulse output of said comparator, the biased output of the bias circuit being applied to said non-inverting input, the second input signal being applied to said inverting input through said switching circuit in accordance with the duty pulse output of said comparator; and

D a filter coupled to the output of said comparator to smooth the duty pulses to yield the desired output.

4,211,972

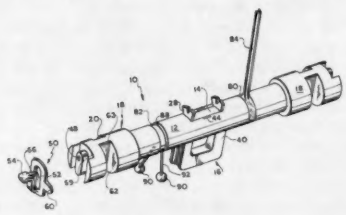
SELF CONTAINED FILAR SUSPENDED METER ROTOR

Willem J. L. Boreas, Sayreville, N.J., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Jul. 31, 1978, Ser. No. 929,884

Int. Cl.[2] G01R *5/02, 1/02*

U.S. Cl. 324—154 R **15 Claims**



1. In an electric meter including a stator mount, a means for generating a magnetic field, and a coil mounted for rotational movement in said magnetic field, an improvement comprising a self-contained rotor and mount assembly removably engageable with said stator mount, said assembly comprising:

a rotor shaft having two ends and including means mounting said coil thereon;

stator engaging means comprising end pieces disposed at each end of said shaft for removably engaging said stator mount;

filar suspension means for suspending said rotor shaft between said end pieces; and

spring tension means on at least one of said end pieces for maintaining tension in said filar suspension means

whereby said self-contained rotor and mount assembly as a unit can be engaged and disengaged by said end pieces.

4,211,973

APPARATUS FOR DETECTING FAULTS TO BE OCCURRED OR INITIALLY EXISTING IN A RUNNING ELECTRIC ROTARY MACHINE

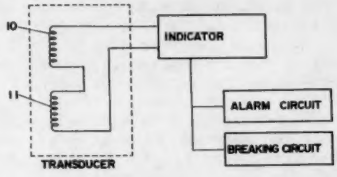
Tetsuya Sato; Osamu Kato, and Hisashi Saito, all of Hyogo, Japan, assignors to Kabushiki Kaisha Teikoku Denki Seisakusho, Osaka, Japan

Continuation of Ser. No. 687,050, May 17, 1976, abandoned, which is a continuation of Ser. No. 404,615, Oct. 9, 1973, abandoned. This application Jan. 18, 1978, Ser. No. 870,361

Claims priority, application Japan, Oct. 11, 1972, 47-101731; Feb. 9, 1973, 48-17882

Int. Cl.[2] G01R *31/02*

U.S. Cl. 324—158 MG **1 Claim**



1. Apparatus for detecting faults occurring or initially existing in an electric rotary machine of an axial air gap type while the machine is running, comprising: a stator core; a rotor having slots; and a detector including a pair of detector coils disposed symmetrically in said stator core relative to the axis of rotation of said rotor and electrically so connected in series with each other that a fundamental wave voltage induced in said detector coils is cancelled and higher harmonic voltages, having a frequency which is determined by the number of said slots, are superimposed on each other resulting in a detection voltage which is the addition of said higher harmonic voltages, said rotor including an odd number of slots to enable said detector to detect said detection voltage of the added higher harmonic wave voltages induced in said coils.

4,211,974

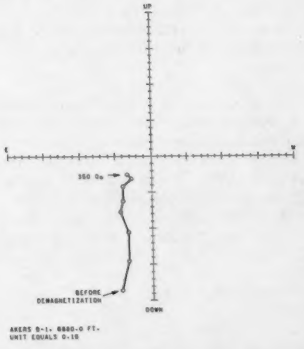
METHOD FOR ORIENTING A BOREHOLE CORE

William E. Henry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 13, 1978, Ser. No. 942,012

Int. Cl.[2] G01V *3/08*

U.S. Cl. 324—377 **5 Claims**



1. A method for longitudinally orienting a borehole core with respect to the longitudinal axis of the drill string which drilled said borehole core in such a manner that the original

longitudinal attitude of said borehole core within the earth may be determined comprising the steps of:

partially demagnetizing at least a portion of said borehole core in steps to thereby at least partially remove in steps the artificial remanent magnetism imparted to said borehole core by said drill string, said artificial remanent magnetism being oriented substantially parallel to the longitudinal axis of said drill string;

measuring the direction and intensity of the total magnetism of said borehole core at desired intervals during the partial demagnetizing procedure;

establishing an artificial remanent magnetism vector which extends from the final measurement of the direction and intensity of the total magnetism of said borehole core taken during said partial demagnetizing procedure towards the initial measurement of the direction and intensity of the total magnetism of said borehole core taken during said partial demagnetizing procedure; and

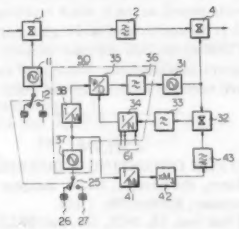
orienting said borehole core in such a manner that said artificial remanent magnetism vector points at least substantially downwardly towards the bottom of said borehole core for a borehole in the Northern hemisphere and points at least substantially upwardly towards the top of said borehole core for a borehole in the Southern hemisphere.

4,211,975

LOCAL SIGNAL GENERATION ARRANGEMENT

Masahiro Kuroda, Tokyo, Japan, assignor to Anritsu Electric Company, Limited, Japan

Filed Apr. 4, 1978, Ser. No. 893,447
Int. Cl.² H04B 1/40
U.S. Cl. 455—75 **10 Claims**



1. A single sideband radio transmitter receiver having a transmitting section for selectively producing a transmission signal consisting of an upper sideband output signal and a lower sideband output signal, comprising:

a first oscillator;

a first pair of crystal resonators;

first switch means coupled to said first oscillator and first pair of crystal resonators for selectively controlling the frequency of oscillation of said first oscillator by a first one and a second one of said first pair of crystal resonators, to thereby selectively produce a first output signal and a second output signal from said first oscillator;

balanced modulator circuit means coupled to receive a modulation signal and responsive to said first output signal from said first oscillator for producing an output signal composed of a signal whose frequency is the sum of said modulation signal frequency and said first output signal frequency and a signal whose frequency is the difference between said modulation signal frequency and said first output signal frequency, and responsive to said second output signal from said first oscillator for producing an output signal composed of a signal whose frequency is the difference between said second output signal frequency and said modulation signal frequency and a signal whose frequency is the sum of said modulation signal frequency and said second output signal frequency;

a single sideband bandpass filter having an upper cut-off frequency which is close to a resonant frequency of said first one of said first pair of crystal resonators and a lower cut-off frequency which is close to a resonant frequency of said second one of said first pair of crystal resonators, and coupled to receive the output signals from said balanced modulator, for selecting an upper sideband intermediate frequency signal, comprising said signal whose frequency is the sum of said modulation signal frequency and said first output signal frequency, and a lower sideband intermediate frequency signal, comprising said signal whose frequency is the differnce between said second ouput signal frequency and said modulation signal frequency;

a standard reference frequency oscillator;

a second pair of crystal resonators;

second switch means for selectively connecting said standard reference frequency oscillator to each of said second pair of crystal resonators, and linked to said first switch means, for developing a first reference frequency signal from said standard reference frequency oscillator when said first output signal is being produced by said first oscillator and a second reference frequency signal when said second output signal is being produced by said first oscillator;

a first frequency divider for dividing the frequency of the output signal from said standard reference frequency oscillator;

frequency multiplier means coupled to the output of said standard reference frequency oscillator, for generating a signal whose frequency is an integral multiple of the frequency of the output signal from said standard reference frequency oscillator;

a voltage-controlled oscillator, for producing a local oscillator signal, and having a frequency control input;

a first frequency mixer having a first input coupled to receive said local oscillator signal from said voltage-controlled oscillator and a second input coupled to receiver the output from said frequency multiplying means;

a filter coupled to receiver the output from said first frequency mixer, for selecting a signal of predetermined frequency from said first frequency mixer output;

a programmable frequency divider having an input coupled to receiver said selected signal from said filter, and input terminals for receiving a first control signal comprising a digital signal in parallel form, said first control signal determining the division ratio of said programmable frequency divider;

a phase comparator having a first input coupled to receive the output signal from said first frequency divider and a second input coupled to receive the output signal from said programmable frequency divider;

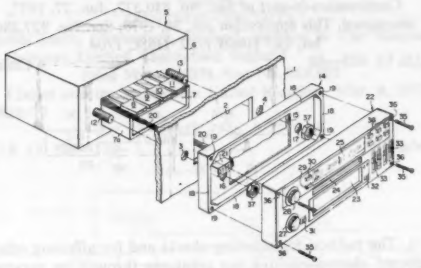
a low pass filter coupled to receive the output from said phase comparator, for producing a second control signal indicative of a phase difference between said first frequency divider output and said programmable frequency divider output, said second control signal being applied to said frequency control input of the voltage controlled oscillator; and

a second mixer coupled to receive said local oscillator signal from the voltage controlled oscillator and to the output of said single sideband bandpass filter, being responsive to said local oscillator signal and said upper sideband intermediate frequency signal for producing said upper sideband output signal; and being responsive to said local oscillator signal and said lower sideband intermediate frequency signal for producing said lower output signal.

4,211,976
COMPOUND ACOUSTIC APPARATUS FOR AUTOMOTIVE VEHICLES

Nobutaro Inoue, Yokohama, Japan, assignor to Shintom Kabushiki Kaisha, Japan

Filed Jun. 13, 1978, Ser. No. 915,217
Claims priority, application Japan, Mar. 31, 1978, 53-36679
Int. Cl.[2] H04B *1/06*
U.S. Cl. 455—344 **7 Claims**



1. A compound acoustic apparatus including a radio receiver and a magnetic tape player and adapted to be mounted on an interior panel of an automative vehicle which is formed with a rectangular first opening and a pair of circular holes located at opposite ends of the opening; the apparatus comprising a main unit including a housing having a front side in which a second opening is formed for receiving a tape cartridge which cooperates with the player, said second opening being smaller in size than said first opening, an operating unit formed with a third opening of a comparable size as said second opening and carrying a plurality of control elements which control the main unit, the operating unit carrying a plurality of manual operating members on its front side which operate the control elements, first fastening means extending through said holes for securing the main unit on the rear side of the interior panel and second fastening means for securing the operating unit on the front side of the interior panel in a manner such that said third opening formed in the operating unit communicates with said second opening formed in the main unit through said first opening formed in the interior panel, whereby a tape cartridge is insertable through said third and first openings into said second opening of said main unit, and connecting means for providing an electrical interconnection between the main unit and the operating unit.

4,211,977
MIXER CIRCUIT ARRANGEMENT

Keiro Shinkawa; Hiroji Shoyama, and Chuichi Sodeyama, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

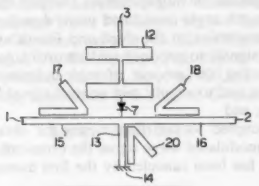
Filed Feb. 15, 1977, Ser. No. 768,730
Claims priority, application Japan, Feb. 16, 1976, 51-14872; Feb. 16, 1976, 51-14873; Feb. 16, 1976, 51-14874; Feb. 16, 1976, 51-14875; Feb. 16, 1976, 51-14876
Int. Cl.[2] H04B *1/26*
U.S. Cl. 455—326 **3 Claims**

1. A mixer circuit arrangement of a high frequency plane circuit employing a microwave strip line as a basic component wherein a diode is connected in parallel with said line and a high frequency signal and a local oscillation signal being applied at opposite ends of said line toward said diode, comprising:

a first filter including a double-open-ended line of a length equal to one half of the wavelength of said local oscillation signal with a portion thereof having a length equal to one quarter of said wavelength from one end of said line being arranged adjacent to said transmission line, said first filter being coupled to the high frequency signal input line at such a point that the impedance thereof as viewed from the junction point of said diode assumes an open impedance at the resonant frequency of said first filter;

a second filter including a double-open-ended line of a length equal to one half of the wavelength of said high frequency signal and constructed in the same manner as said first filter, said second filter being coupled to the local oscillation signal input line at such a point that the impedance thereof as viewed from said junction point of said diode assumes an open impedance to the resonant frequency of said second filter;

a line conected to said junction point of said diode on the opposite side to said diode and exhibiting a substantially shorted impedance to the frequency of an intermediate frequency signal which is a frequency component equal to



the frequency difference between said high frequency signal and said local oscillation signal; and

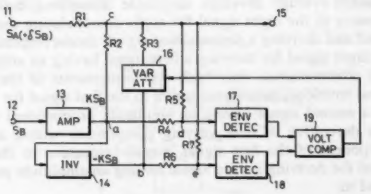
a third filter including a double-open-ended line of a length equal to one half of the wavelength of an image signal having a frequency equal to the difference between twice the frequency of said local oscillation signal and the frequency of said high frequency signal and having the same construction as said first filter, said third filter being coupled to said line connected to said junction point, at such point that the impedance thereof as viewed from said junction point of said diode assumes a shorted impedance to the frequency of said image signal; and

a line connected to the other end of said diode to take out said intermediate signal produced at said diode.

4,211,978
CROSS-TALK COMPONENT CANCELLATION CIRCUIT IN AN ANGLE-MODULATED WAVE SIGNAL TRANSMISSION SYSTEM

Nobuaki Takahashi, Yamato, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 25, 1978, Ser. No. 899,891
Claims priority, application Japan, Apr. 25, 1977, 52/47589; Apr. 25, 1977, 52/47590; Apr. 25, 1977, 52/47591; Apr. 25, 1977, 52/47592; Apr. 25, 1977, 52/47593; Apr. 25, 1977, 52/47594
Int. Cl.[2] H04B *1/12*
U.S. Cl. 455—295 **10 Claims**



1. A cross-talk component cancellation circuit in an angle-modulated wave signal system for receiving first and second angle-modulated wave signals on at least two channels, wherein a cross-talk component of the second angle-modulated wave signal is admixed with the first angle-

modulated wave signal, said cross-talk component cancellation circuit comprising:

means for phase inverting the second angle-modulated wave signal;

first means for mixing respective portions of the second angle-modulated wave signal and the phase-inverted second angle-modulated wave signal with the first angle-modulated wave signal to produce a first means output signal;

means responsive to a control signal for varying at least one respective portion of the second angle-modulated wave signal and the phase-inverted second angle-modulated wave signal for mixing by the first means;

second means for mixing the first means output signal with the second angle-modulated wave signal and the phase-inverted second angle-modulated wave signal in respective specific mixing quantities thereby to produce third and fourth angle-modulated wave signals;

means responsive to the third and fourth angle-modulated wave signals to produce said control signal for variably controlling the amount of said at least one respective portion and to supply said control signal to said varying means; and

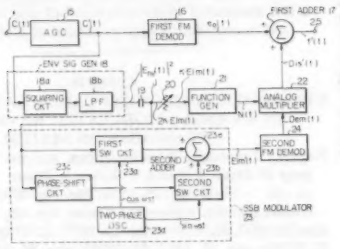
means coupled to said first means for obtaining the first angle-modulated wave signal the cross-talk component of which has been canceled by the first means.

4,211,979

CIRCUIT ARRANGEMENT FOR ELIMINATING WAVEFORM DISTORTION OF AN ANGLE-MODULATED SIGNAL TRANSMITTED OVER MULTIPATHS

Teruo Murasoka; Masami Yamazaki, and Yukinobu Ishigaki, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 28, 1978, Ser. No. 919,744
Claims priority, application Japan, Jun. 29, 1977, 52-77558
Int. Cl.[2] H04B *1/12*
U.S. Cl. 455—306 **16 Claims**



13. Apparatus for enabling elimination of multipath distortion of an angle modulated input signal having a relatively constant average envelope amplitude comprising means responsive to the input signal for angle demodulating the input signal and deriving a demodulated signal, means responsive to the input signal for deriving a first signal having an amplitude E(t) commensurate only with AC components of the input signal envelope, means responsive to the first signal for deriving a second signal having an amplitude proportional to the time derivative of time varying components within an AC component of the first signal, means responsive to the first signal for deriving a third signal having an amplitude proportional to:

$$\frac{E(t)}{1 + 2E(t)},$$

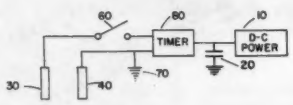
means for non-linearly combining said second and third signals to derive a signal representing multipath distortion on the demodulated signal amplitude, and means for linearly combining the demodulated and multipath distortion representing signals to substantially eliminate the multipath distortion from the demodulated signal.

4,211,980

METHOD OF CREATING AN ELECTRIC FIELD FOR SHARK REPELLENT

William R. Stowell, 7572 Trailwind Dr., Cincinnati, Ohio

Continuation-in-part of Ser. No. 810,377, Jun. 27, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,386
Int. Cl.[2] H04B *1/02;* H05C *1/04*
U.S. Cl. 455—40 **6 Claims**



1. The method for repelling sharks and for affecting other selected electro-sensitive sea creatures through its nervous system utilizing a d.c. voltage source comprising:

applying a pulsed d.c. potential to establish electron and ion flow between a cathode and anode electrodes immersed in salt water,

maintaining said d.c. potential on said electrodes 0.5 to 10 milli-seconds, which is less than the period of time to build up an ion shield about said cathode, said period of maintaining said d.c. potential is minimal to affect a shark's nervous system,

spacing said pulsed d.c. potential to a repetition rate related to the natural frequency of the shark's nervous system (6–12 cycles per second), and

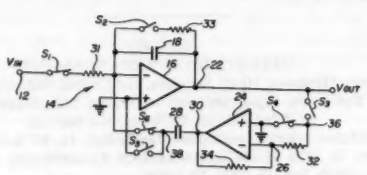
discontinuing the application of said d.c. potential prior to said build up of said ion shield.

4,211,981

INTEGRATOR WITH DIELECTRIC ABSORPTION CORRECTION

Jesse P. Lerma, La Habra, Calif., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 4, 1978, Ser. No. 902,599
Int. Cl.[2] H03K *5/00;* G06G *7/18*
U.S. Cl. 328—127 **9 Claims**



1. In an electronic integrating circuit, including an amplifier with input and output terminals, and an integrating capacitor, connected between said terminals, having dielectric absorption, the dielectric absorption causing an error voltage build-up on said integrating capacitor following an integration interval, wherein the improvement comprises:

a second amplifier having respective input and output terminals;

a second capacitor having one terminal connected to the second amplifier output terminal; and

switch means for selectively coupling, in sequence, (1) immediately following an integration interval, the first amplifier output terminal to the second amplifier input termi-

nal for sampling said error voltage and charging said second capacitor to a sampled voltage representing said error voltage, and (2) during the next integration interval, the other terminal of said second capacitor to the first amplifier input terminal for transferring said sampled voltage to said integrating capacitor to substantially counteract said error voltage during the next integration interval.

4,211,982

CONTROL CIRCUITS

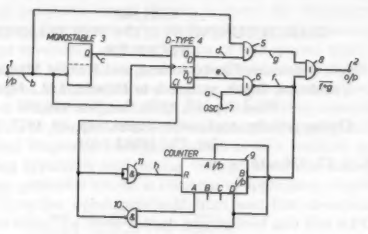
Robin Smith, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Mar. 9, 1978, Ser. No. 885,007

Claims priority, application United Kingdom, Mar. 9, 1977, 9828/77

Int. Cl.² H03K *1/16, 5/20, 9/06*

U.S. Cl. 328—138 **8 Claims**



1. In a radar display, a control circuit suitable for controlling the position of movable markers on a p.p.i. radar display including means for receiving control pulses and for passing them to an output terminal when the rate at which control pulses are received is below a predetermined value, and means for generating a plurality of output pulses for each received pulse when said rate is above the predetermined value.

4,211,983

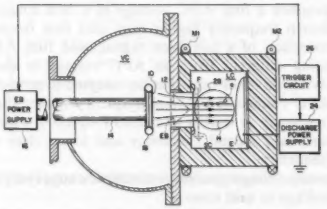
HIGH ENERGY ELECTRON BEAM DRIVEN LASER

Jack D. Daugherty, Winchester; Jonah H. Jacob, Cambridge, and Joseph A. Mangano, Belmont, all of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed May 1, 1978, Ser. No. 901,600

Int. Cl.² H01S *3/097*

U.S. Cl. 331—94.5 PE **17 Claims**



1. In the method of producing stimulated emission of radiation from a lasable gas disposed in a working region in a cavity having an optical axis and imperforate walls for confining said gas and comprising part of a gas laser, the steps comprising:

(a) providing a gaseous lasable medium in said cavity;

(b) generating exterior of said cavity a broad area electron beam having a current density sufficient to generate a self-induced magnetic field effective to cause pinching of said electron beam, said electron beam being at least in part effective to provide a population inversion sufficient to support said stimulated emission of radiation;

(c) introducing said broad area electron beam into said cavity through a wall thereof transverse to said optical axis; and

(d) establishing a guiding magnetic field having disposed substantially within it said broad area electron beam, said guiding magnetic field further having a vector substantially parallel to and coincident with the direction of said electron beam and an intensity greater than that of said self-induced magnetic field.

4,211,984

OSCILLATING CIRCUIT ARRANGEMENTS FOR HIGH FREQUENCY INDUSTRIAL GENERATORS

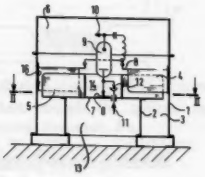
Kurt Lamberts; Jürgen Leppin, both of Clausthal-Zellerfeld; Berndt Greten, and Harry Neubauer, both of Springe, all of Fed. Rep. of Germany, assignors to Bison-Werke, Bahre & Greten GmbH & Co. KG, Springe, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 905,081

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722355

Int. Cl.² H03B *5/18*

U.S. Cl. 331—97 **11 Claims**



1. An oscillating circuit arrangement for high frequency industrial generators suitable for warming an electrically poorly conducting substance and comprising a resonant circuit in the form of a coaxial conduction system including a capacitor having interdigitated plates and an associated electron tube and in which the coaxial conducting system is of square cross section and the plates of the capacitor are arranged at right angles to respective surfaces of internal and external conductors of the coaxial conduction system.

4,211,985

CRYSTAL OSCILLATOR USING A CLASS B COMPLEMENTARY MIS AMPLIFIER

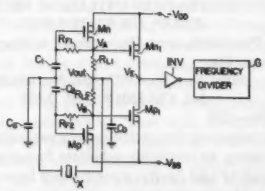
Osamu Yamashiro, Ohmiya, Japan, assignor to Hitachi, Ltd., Japan

Division of Ser. No. 719,238, Aug. 31, 1976, Pat. No. 4,100,502. This application Apr. 26, 1978, Ser. No. 900,321

Claims priority, application Japan, Sep. 3, 1975, 50-105919

Int. Cl.² H03B *5/36*

U.S. Cl. 331—116 FE **17 Claims**



1. An oscillator circuit including an amplifier means using a complementary MIS inverter circuit and a positive feed-back means connected between the input and the output of said amplifier means for feeding back the output signal of said

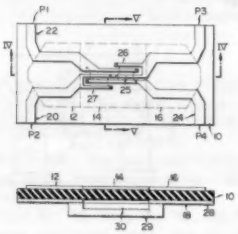
amplifier means to the input thereof and including an inductive element and capacitance elements provided at the input and the output of said amplifier means, the inverter circuit of said amplifier means including a p-channel and n-channel FETs, a first resistance means connected between the drains of said FETs, second resistance means connected between the drain and gate of said p-channel FET, and third resistance means connected between the drain and gate of said n-channel FET, whereby the bias voltage between the gate and the source of each of said p-channel and n-channel FETs is set to a predetermined voltage.

4,211,986

STRIP LINE COUPLER HAVING SPACED GROUND PLATE FOR INCREASED COUPLING CHARACTERISTIC

Yusuke Tajima, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 17, 1978, Ser. No. 925,531
Claims priority, application Japan, Jul. 25, 1977, 52-89022
Int. Cl.[2] H01P 5/18
U.S. Cl. 333—116 **7 Claims**



1. A strip line coupling circuit comprising:

a dielectric plate having first and second planar surfaces opposite to each other;

coupling means formed of a plurality of strip line conductors arranged on said first planar surface of said dielectric plate and including strong and weak coupling sections connected with one another; and

a ground conductor formed on said second planar surface of said dielectric plate, that portion of said ground conductor which faces said strong coupling section being separated from said second planar surface of said dielectric plate by a predetermined distance to lower the dielectric constant and thereby increase the coupling capacity of said strong coupling section over said weak coupling section, and the remaining portion of said ground conductor being attached to the second planar surface of said dielectric plate.

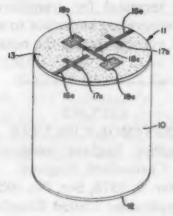
4,211,987

CAVITY EXCITATION UTILIZING MICROSTRIP, STRIP, OR SLOT LINE

Jing-Jong Pan, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Nov. 30, 1977, Ser. No. 856,037
Int. Cl.[2] H01P 7/06, 5/00
U.S. Cl. 333—230 **15 Claims**

1. An arrangement for excitation of a resonator comprising a resonant cavity, an insulating substrate forming at least a portion of a wall of said cavity, a conductive layer formed on the surface of said substrate inside said cavity, a slot being formed in said conductive layer, and coupling means mounted on the outer surface of said substrate for coupling energy through said slot into said cavity and for extracting energy from said cavity through said slot, and wherein said coupling means comprises a pair of coextensive conductive microstrips disposed on said substrate with the ends thereof positioned above the area of the



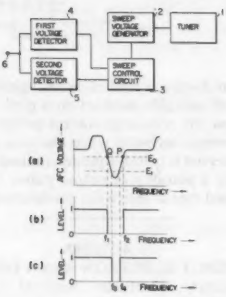
slot in said conductive layer and being spaced by a predetermined amount.

4,211,988

SEARCH TUNING SYSTEM FOR TELEVISION RECEIVER

Shigeo Matsuura; Eisaku Akutsu, and Hiroshi Miyamoto, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 27, 1978, Ser. No. 946,193
Claims priority, application Japan, Sep. 30, 1977, 52-117452
Int. Cl.[2] H03J 3/04
U.S. Cl. 334—16 **3 Claims**



1. A search tuning system for a television receiver comprising:

a tuner having frequency increased monotonously in response to application of a tuning voltage of a magnitude increased monotonously in one direction and adapted to produce a first AFC voltage at a first frequency and a fourth frequency higher than said first frequency upon reception of a television signal, said first AFC voltage being different from an AFC voltage in the quiescent state, said tuner being further adapted to produce a second AFC voltage at a second frequency higher than said first frequency as well as at a third frequency which is higher than said second frequency and lower than said fourth frequency:

a sweep voltage generator circuit for supplying said tuning voltage to said tuner;

a sweep control circuit for supplying a control signal to said sweep voltage generator circuit thereby to control increasing, decreasing and holding of said tuning voltage;

a first voltage detector circuit for detecting when the AFC voltage of said tuner has attained said first voltage thereby to produce a first detection signal to be supplied to said sweep control circuit;

wherein said sweep voltage generator circuit is controlled by said sweep control circuit unless said first detector circuit produces said first detection signal, whereby said

tuning voltage applied to said tuner is caused to vary in said one direction thereby to sweep said tuning frequency, while upon reception of a television signal during said frequency sweeping, the sweeping of said tuning voltage is inverted in response to generation of said first detection signal from said first detector circuit, wherein said sweep control circuit responds to disappearance of said first detection signal in the course of said inverted sweeping thereby to hold the instantaneous tuning voltage and stop the sweeping of said tuning frequency;

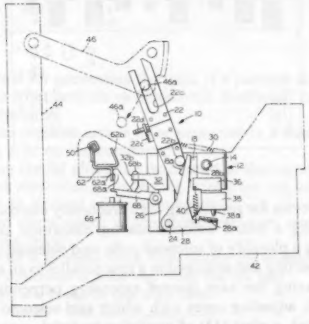
said search tuning system further including a second voltage detector circuit for producing a second detection signal when AFC voltage of said tuner has attained said second AFC voltage and supplying said second detection signal to said sweep control circuit, wherein, upon detection of said second detection signal through said second detector circuit in the course of said frequency sweeping in said one direction, said second detection signal is applied to said sweep control circuit which then controls said sweep voltage generator circuit thereby to invert the frequency sweeping direction and hold the corresponding tuning voltage invariably until application of said second detection signal, while upon production of said second detection signal from said second voltage detector circuit said second detection signal is supplied to said sweep control circuit to be stored therein for preparation of stopping said inverted frequency sweeping, which is then realized by holding invariably said tuning voltage from said sweep voltage generator circuit in response to application of said first detection signal produced from said first detection circuit when the AFC voltage has attained said first AFC voltage at said first frequency.

4,211,989

CIRCUIT BREAKER BELL ALARM AND LOCKOUT ACCESSORY APPARATUS

Vincent P. Acampora, Bristol, Conn., assignor to General Electric Company, New York, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,079
Int. Cl.[2] H01H *73/12, 75/00, 77/00*
U.S. Cl. 335—17 **10 Claims**



1. Circuit breaker accessory apparatus comprising, in combination:

A. a frame;

B. an accessory latch pivotally mounted to said frame;

C. a spring biasing said accessory latch for pivotal movement in a first direction;

D. a latch lever mounted to said frame and biased into latching engagement with said accessory latch to constrain pivotal movement thereof in said first direction;

E. an actuating arm operatively coupled adjacent one end with the breaker movable contacts and mounted at its other end to said accessory latch for pivotal movement from a reset position to a lockout position upon automatic tripping of the circuit breaker to open its contacts;

F. an auxiliary switch;

G. an operating lever mounted by said frame for movement between a de-actuating position and an actuating position in actuating engagement with said switch, said operating lever

(1) normally biased to its actuating position,

(2) held in its de-actuating position by said actuating arm while in its reset position, and

(3) released for movement to its actuating position by the movement of said actuating arm to its lockout position; and

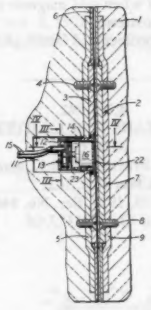
H. cancelling means acting on said latch lever to release said accessory latch for pivotal movement in said first direction under the urgence of said spring, whereby said actuating arm is swung to a defeat position, thereby engageable returning said operating lever to its de-actuating position.

4,211,990

ELECTRIC SWITCH CONCEALING HINGE

Joseph W. Gwozdz, Clark Summit, Pa., assignor to McKinney Manufacturing Company, Scranton, Pa.

Filed Jul. 10, 1978, Ser. No. 923,022
Int. Cl.[2] H01H *36/00*
U.S. Cl. 335—205 **5 Claims**



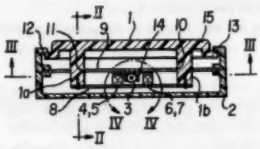
1. In combination with a door frame having a jamb and containing a normally closed door member, a hinge with a jamb leaf and a door leaf member, means securing the jamb leaf to said jamb, means securing the door leaf member to said door member, one of said members having a surface facing said jamb leaf in close proximity thereto when said door member is closed, the jamb having a hole extending into it from behind the jamb leaf of the hinge and concealed by said leaf, the back of said jamb leaf being provided with a recess facing the jamb hole and having a non-ferrous front wall, at least the area of said one member surface opposite said front wall being ferrous metal, and an electric switch housing secured in said jamb hole and projecting into said jamb leaf recess, the housing containing an electric switch and a permanent magnet for activating it when the door member is closed and attracts the magnet, said switch housing being concealed by and unattached to said hinge so that the hinge can be removed from said jamb without disturbing the housing.

4,211,991

MAGNET-CONTROLLED SWITCH

Claude Lombard, Le Chesnay, and Guy Viala, Paris, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed May 22, 1978, Ser. No. 907,965
Claims priority, application France, May 25, 1977, 77 15894
Int. Cl.[2] H01H *9/00*
U.S. Cl. 335—207 **10 Claims**



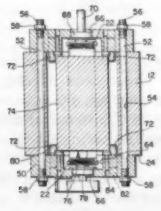
1. A magnetic controlled switch with momentary contact, said switch comprising:
- a case;
- at least one flexible strip interruptor in said case;
- a first ferromagnetic plate fixed to said case;
- a manipulation element movably positioned in said case;
- a second ferromagnetic plate in said case and fixed to said manipulation element;
- at least one pair of magnets, each of said magnets being fixed to one of said plates and contacting the other of said plates to hold said plates in parallel spaced relation, each said pair of magnets having mutually opposite poles adjacent each said plate thereby creating a magnetic field perpendicular to said plates; and wherein said at least one flexible strip interruptor is fixed to one of said plates between said one of said plates and the other of said plates, each said interruptor being positioned between at least one of said pairs of magnets so that said interruptor is subjected to said magnetic field when said magnets are separated from said other of said plates;
- whereby said plates protect said interruptor from extraneous magnetic fields.

4,211,992

POSITIONING MEANS FOR LIMITED ROTATION MOTOR

David M. Gaskill, Jr., Providence, R.I., assignor to Atlan-Tol Industries, Inc., West Warwick, R.I.

Filed Sep. 25, 1978, Ser. No. 946,210
Int. Cl.[2] H01F *7/08*
U.S. Cl. 335—222 **6 Claims**



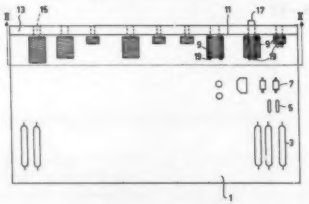
1. In a limited rotation motor having a fixed stator including front and rear generally planar faces which define a central opening longitudinally extending therebetween, a fixed permanent magnet mounted within said stator opening and disposed in closely opposed spaced radial opposition thereto and forming a magnetic field therebetween, and a moving coil positioned for back and forth limited arcuate movement within said magnetic field; the improvement comprising, means for simultaneously positioning said magnet and coil with respect to each other and said stator, said positioning means including a pair of opposed bridges transversely extending across said front and rear stator faces respectively, each of said bridges including at least one pair of transversely spaced longitudinally directed first pins extending inwardly from the inner surface of said bridge proximal to its respective stator face into said stator opening and contacting opposite side surfaces of said magnet in side-to-side parallel contact to laterally space said magnet within said stator opening in a first direction, a pair of transversely spaced longitudinally directed second pins positioned transversely between said first set of pins and extending inwardly from said bridge inner surfaces, the terminal ends of said second pins positioned in contact with the open face of an undercut formed on the longitudinally opposed front and rear faces to laterally space said magnet within said stator opening in a second direction coplanar and normal to said first direction, and means for maintaining said bridges in fixed position relative to said stator, said coil rotatably journalled in said bridges at opposite ends thereof.

4,211,993

DEVICE FOR PROCESSING HIGH-FREQUENCY ELECTRICAL SIGNALS

Johannes H. Hendriks, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,361
Claims priority, application Netherlands, Nov. 16, 1977, 7712604
Int. Cl.[2] H01F *21/06*
U.S. Cl. 336—131 **1 Claim**



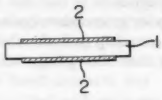
1. A device for processing high-frequency electrical signals, comprising a board accommodating electronic components including a plurality of solenoid coils, said solenoid coils being self-supporting and arranged in a row parallel to an edge of the board having the axes thereof extending perpendicularly to said edge, adjusting cores with which said solenoid coils may be adjusted, a plate (13) of insulating material, extending perpendicularly to the board (1) and being arranged parallel to the row of solenoid coils (9), said plate (13) comprising apertures (15) which are substantially coaxial with the solenoid coils and in which the adjusting cores (17) are provided, said plate (13) being provided, at the area of at least one of the apertures (15), with a coupling piece (19) which is slidable into the associated solenoid coil (9) and which comprises a passage (21) which is coaxial with the aperture (15) whereby when one of said adjusting cores is inserted into the passage of said coupling piece such that the associated solenoid coil may be adjusted, the coupling piece thereupon prevents mechanical vibration of the solenoid coil.

4,211,994

CERAMIC VARISTOR

Hiroshi Oda, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 4, 1978, Ser. No. 965,867
Claims priority, application Japan, Dec. 9, 1977, 52/148302
Int. Cl.[2] H01C 7/10
U.S. Cl. 338—21 8 Claims



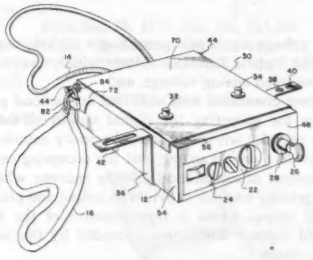
1. A ceramic varistor comprising a polycrystalline sintered ceramic body having non-linear voltage current characteristics, a ceramic body having a high electrical conductivity bonded to said polycrystalline sintered ceramic body having a non-linear voltage current characteristics through a metal, and electrodes formed on outer surfaces of the bodies.

4,211,995

ALARM AND LOCKING DEVICE TO PREVENT THEFT OF AN ARTICLE

Jack Smith, 209 W. Alexander, Apt. A, Euless, Tex. 76039

Filed Sep. 20, 1976, Ser. No. 724,649
Int. Cl.[2] G08B 21/00; B60R 11/02
U.S. Cl. 340—63 3 Claims



1. A method for preventing the theft of a portable article to be protected from beneath an automobile dashboard comprising, in combination:

placing the portable article to be protected in a container;

mounting a lid on the container;

positioning the lid under the dashboard of the automobile;

looping an electrically conducting wire from the container around an element of the automobile;

so that an alarm signal is generated whenever any of the following occur:

(a) the lid is brought forth from under the dashboard;

(b) the container is removed from the lid; and

(c) there is a break in the wire loop.

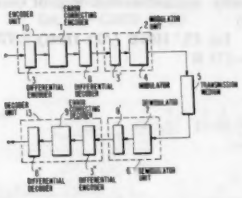
4,211,996

ERROR CORRECTION SYSTEM FOR DIFFERENTIAL PHASE-SHIFT-KEYING

Katsuhiro Nakamura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1978, Ser. No. 926,062
Claims priority, application Japan, Jul. 19, 1977, 52-87013; Jul. 19, 1977, 52-87014; Jul. 19, 1977, 52-87015
Int. Cl.[2] G06F 11/12
U.S. Cl. 371—37 3 Claims

1. An error correcting system for differential phase-shift-keying comprising an encoder unit including a differential encoder for differentially encoding an input data sequence, an error correcting encoder for adding a check digit sequence to the differentially encoded data sequence, and a differential decoder for differentially decoding the data sequence added with the check digit sequence; a decoder unit including a differential encoder for differentially encoding a received data sequence, an error correcting decoder for correcting error



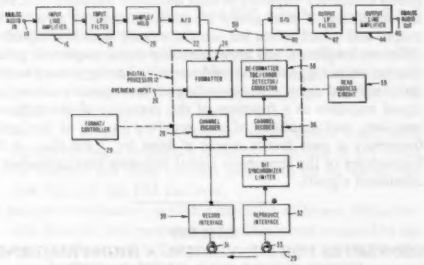
digits contained in the differentially encoded received data sequence, and a differential decoder for differentially decoding the output data sequence from the error correcting decoder; and a transmission medium disposed between said encoder and decoder units and including a differentially encoded phase-shift-keying modulator unit and a differentially encoded phase-shift-keying demodulator unit.

4,211,997

METHOD AND APPARATUS EMPLOYING AN IMPROVED FORMAT FOR RECORDING AND REPRODUCING DIGITAL AUDIO

Paul J. Rudnick, Oakland, and Alastair M. Heaslett, Palo Alto, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Nov. 3, 1978, Ser. No. 957,270
Int. Cl.[2] G06F 11/12; G11B 27/00
U.S. Cl. 371—38 23 Claims



1. A method for recording a signal as digital data in a recording medium, comprising the steps of;

generating successive series of digital words representing the digital data;

selectively separating alternate words of the series of digital words into respective separate sub-blocks of data;

generating error correction information for a given pair of separate sub-blocks thereof;

interspersing error detection and sync information within given locations in each data and error correction sub-blocks; and

recording a selected succession of sub-blocks of data and error correction information within at least two separate tracks in the recording medium to define data blocks with selected inter-block gaps therebetween.

4,211,998

METHOD OF AND REMOTE CONTROL APPARATUS FOR REMOTELY CONTROLLING A MEDICAL APPLIANCE

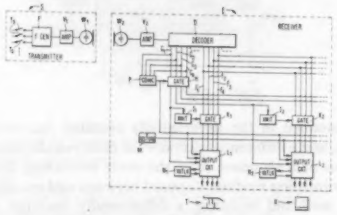
Klaus M. Junginger, Rastatt, and Hermann Kieferle, Karlsruhe, both of Fed. Rep. of Germany, assignors to Stierlen-Maquet Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 936,060

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738406

Int. Cl.[2] H04B *7/00*; H04Q *9/12*

U.S. Cl. 340—171 R **18 Claims**



6. A remote control arrangement for controlling a medical appliance, comprising a transmitter, a receiver associated with at least one appliance, said transmitter comprising a generator for generating frequency signals of different frequencies as a function of a command signal, said transmitter having means for generating a command signal as a sequence of frequency signal impulses and for the generation alternately therewith of group frequency impulses of group frequencies different from all the frequency signals corresponding to command signals which can be generated, said receiver having at its input an amplifier selective for the frequencies of the frequency signal impulses corresponding to the command signals and of the group frequency impulses and a decoding circuit following said amplifier which, when supplied with frequency signal impulses emits command signal impulses to an output corresponding to the number of the frequency signals which can be generated, said amplifier further operating when fed by the group frequency impulses to emit indicator impulses indicating the reception of said group frequency impulses to a further output and which when fed simultaneously with two signals of different frequency and approximately equal amplitude generates no output signals, and said receiver having means to emit the command signal corresponding to the respective command signal impulses as a function of the presence of the indicator impulses, said amplifier of said receiver having at the group frequency a gain factor lower at least by 3 dB than at the frequencies of the frequency signal impulses corresponding to command signals.

4,211,999

CONVERTER FOR CONVERTING A HIGH FREQUENCY VIDEO SIGNAL TO A DIGITAL SIGNAL

Ronald L. Clark, Indianapolis, and John L. Kreeger, Cumberland, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1977, Ser. No. 854,455

Int. Cl.[2] H03K *13/175*

U.S. Cl. 340—347 AD **7 Claims**

1. A high speed peak-detecting analog-to-digital converter comprising,

an analog voltage signal,

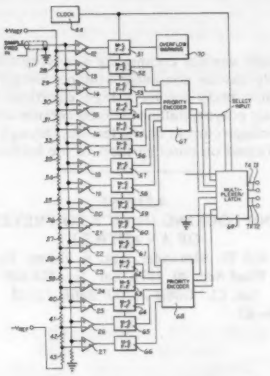
a plurality of voltage comparators each having an output terminal and having an input connected to said analog voltage signal,

first means for providing a different threshold voltage to each said comparator, each said comparator providing an output signal at said output terminal whenever the voltage value of said analog voltage signal exceeds said threshold voltage being applied to a particular comparator,

clock pulse generating means,

second means connected with said output terminals and triggered by said clock pulse generating means for continuously sampling said analog voltage signal and providing an output signal for each comparator whose threshold voltage is lower than the voltage value of the sampled analog voltage signal,

first and second priority encoders connected with said second means for encoding each threshold voltage which is lower in value than the voltage value of the sampled



analog voltage signal and providing a digital output denoting the highest threshold voltage which was exceeded by the sampled analog voltage, and

a multiplexer connected with said first and second priority encoders for accepting the digital output of said first priority encoder when said second priority encoder does not provide a digital output and for accepting only the digital output of said second priority encoder when said second priority encoder provides an output and providing a digital output which is representative of the highest threshold voltage which was exceeded by the sampled analog voltage.

4,212,000

POSITION-TO-DIGITAL ENCODER

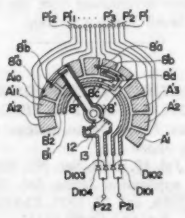
Seiji Yamada, Saki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 21, 1978, Ser. No. 935,390

Claims priority, application Japan, Aug. 20, 1977, 52-100017; Oct. 2, 1977, 52-106016

Int. Cl.[2] G08C *9/08*

U.S. Cl. 340—347 P **11 Claims**



1. A digital code signal generating device comprising:

at least one set of a plurality of conducting elements each

arranged in a row with each of said conducting elements having the same pitch and the same length with respect to the direction of the row, and said conducting elements being spaced to have the same gap between adjacent conducting elements;

at least one pair of brush contacts slidable over said at least one set of conducting elements along the direction of said row, and being spaced from one another in the direction of the row such that said at least one pair of contacts are either both on a single conducting element or respectively on two adjacent conducting elements;

supply means for providing an electrical signal to said at least one pair of brush contacts; and

a decoder interconnected with each one of said conducting elements for generating two sets of different binary coded outputs in accordance with whether said at least one pair of brush contacts are contacting one or two of said conducting elements.

4,212,001

ELECTRIC HORN

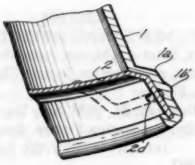
Toshiji Taira, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 25, 1977, Ser. No. 818,668

Claims priority, application Japan, Aug. 31, 1976, 51-117534[U]; Sep. 2, 1976, 51-118192[U]; Dec. 16, 1976, 51-169085[U]

Int. Cl.² G10K *9/00*

U.S. Cl. 340—388 **1 Claim**



1. An electric horn comprising:

a cup-shaped housing having a peripheral edge shaped to form a bent flange portion and a bulge having an inside wall formed in said bent flange portion and extending from the interior of said housing to a point on said flange portion spaced from the interior of said housing to provide an air passage therein,

a diaphragm member disposed in said housing and including a substantially flat central portion having a surface facing outwardly of said housing and a bent peripheral portion extending from said flat central portion at an angle greater than 90° with respect to said surface, said bent flange portion engaging said bent peripheral portion of said diaphragm member on the exterior thereof to hold said diaphragm member in said housing, said bent peripheral portion having a vent formed therein opening into the inside wall of said bulge in said bent flange portion so that the inside of said housing is communicated with the atmosphere through the inside of said bulge and said vent in said bent peripheral portion of said diaphragm, and

means disposed in said housing for driving said diaphragm.

4,212,002

METHOD AND APPARATUS FOR SELECTIVE ELECTRONIC SURVEILLANCE

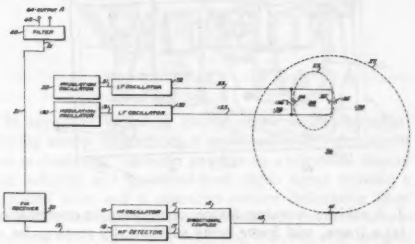
Robert D. Williamson, 7350 NW. First Ct., Pembroke Pines, Fla. 33024

Continuation-in-part of Ser. No. 689,336, May 24, 1976, Pat. No. 4,087,802. This application Mar. 3, 1978, Ser. No. 883,058

The portion of the term of this patent subsequent to May 9, 1995, has been disclaimed.

Int. Cl.² G08B *13/22*

U.S. Cl. 340—572 **21 Claims**



12. An apparatus for setting up within a surveillance area at least one precisely defined control zone and detecting within that control zone and that control zone's margin the presence of a transponder having signal mixing capability comprising:

an HF signal generator;

means coupled to the HF signal generator for propagating through the surveillance area an electronic wave corresponding to the HF signals generated;

a source of first LF signals for each control zone, such signals having a frequency difference than that of any other LF signals, but close enough thereto to all be within the pass band of an FM receiver;

a first modulation oscillator coupled to the source of first LF signals, thereby creating first FM signals generated for that control zone;

a first means coupled to the source of the first FM signals for each control zone for establishing through that control zone an electronic field corresponding to the first FM signals generated for that control zone;

a source of second LF signals for each control zone; such signals having a frequency different from that of any other LF signals, but close enough thereto to all be within the pass band of the FM receiver;

a second modulation oscillator having a different characteristic than the first modulation oscillator and coupled to the source of second LF signals to frequency modulate the source of second LF signals, thereby creating a source of second FM signals;

a second means coupled to the source of second FM signals for each control zone for establishing a control zone margin for each control zone with an electronic field corresponding to the second FM signals for that control zone, thereby precisely defining that control zone;

signal detecting means constructed to detect FM signals only when received as a composite with the HF signals;

means for coupling the signal detecting means with the surveillance area for receiving the signals therefrom; and

a means coupled to the signal detecting means delivering an electronic output for any control zone in response to detection of first FM signals for that control zone, when those first FM signals predominate over that control zone's second FM signals.

4,212,003

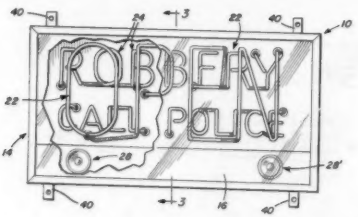
ROBBERY WARNING DEVICE CONTAINING SELECTIVELY ACTUATABLE INFORMATION BEARING AND WARNING DISPLAYS

Terry L. Mishoe, Thomasville, and Walton E. Peatross, High Point, both of N.C., assignors to Edward N. Post, High Point, N.C.

Continuation-in-part of Ser. No. 592,635, Jul. 2, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 898,898

Int. Cl.[2] **G08B** *13/00;* **G09F** *9/48*

U.S. Cl. 340—574 **4 Claims**



1. A robbery warning device, comprising, in combination:

(a) a frame, said frame being substantially rectangular and including four substantially planar peripheral edge walls defining a through opening;

(b) a translucent panel mounted on the frame over the through opening forming a front wall thereof, and having a pair of spaced, substantially parallel faces;

(c) lamp means forming a sign and disposed within the through opening adjacent a one of the faces of the panel directed inwardly of the frame for being selectively energized and making visible through the translucent panel the sign formed by the lamp means, the lamp means including a first neon sign and a second neon sign disposed in superimposed relationship within the frame, said first neon sign being structured to provide a mundane message or advertisement, said second neon sign being structured to produce an emergency message, said first neon sign being positioned between said second neon sign and said translucent panel;

(d) strobe means mounted in the frame for actuation when the lamp means is actuated, illuminating the panel and attracting attention to the sign formed by the lamp means and made visible by the lamp means when viewed from beyond the other of the faces of the panel, which other of the faces is directed outwardly of the frame; and

(e) circuit means connected to said lamp means and said strobe means for controlling selective actuation of said first neon sign, said second neon sign, and said strobe means, said circuit means including a first switch means, said first switch means being normally closed for energizing the first neon sign, and a second switch means, said second switch means being normally open and selectively alternatively energizable for providing current to said second neon sign and said strobe means in unison and deenergizing said first neon sign.

4,212,004

PRESSURE DROP DETECTORS

Erle W. Bensemann, Christchurch, New Zealand, assignor to Benefis Systems Limited, Christchurch, New Zealand

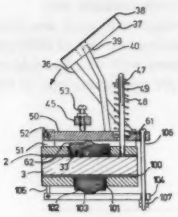
Filed Apr. 25, 1978, Ser. No. 900,047

Claims priority, application New Zealand, Jul. 7, 1977, 184590

Int. Cl.[2] **G08B** *17/04;* **H01H** *37/40*

U.S. Cl. 340—591 **4 Claims**

1. A pressure drop detector for a pressurized fluid system comprising: a block of material having in a first surface thereof a pressurized fluid circuit in the form of grooves or channels forming fluid flow paths in said first surface; apertures provided in a second surface of said block for connecting said fluid circuit with tubes or pipes of the pressurized fluid system; a first flat diaphragm positioned over said first surface but movable relative thereto; a second flat diaphragm positioned over said second surface but movable relative thereto; each diaphragm controlling the operation of at least one piston respectively movable therewith; said first diaphragm (a) detecting from said fluid circuit the pressure in said fluid system at an appropriate portion of said fluid circuit and causing said piston movable therewith to operate a low system pressure indicating means when the system pressure has dropped to a predetermined level and (b) controlling fluid flow along said fluid flow paths in said fluid circuit at at least one valve seat portion provided on said first surface; said second surface being connected by at least one fluid path to said first surface whereby said second diaphragm detects the pressure in a pressurized fluid supply connected to said pressurized fluid circuit; another of said pistons is moved by said second diaphragm to provide a bias for said indicating means so that the said predetermined level of the lowered system pressure at which a low pressure indication is given is at least partly determined by the pressure in the pressurized fluid supply.



4,212,005

MOVEMENT DETECTOR

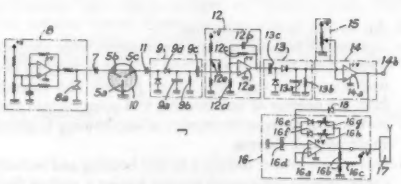
Jacques Hubert, Saint-Avold, and Jean-Marie Ory, Heillecourt, both of France, assignors to Societe Chimique des Charbonnages, Paris, France

Filed Jun. 28, 1978, Ser. No. 920,070

Claims priority, application France, Jun. 28, 1977, 77 19869

Int. Cl.[2] **H04B** *7/00, 9/00*

U.S. Cl. 340—603 **15 Claims**



1. A movement detector comprising a sensor formed by a closed container partially filled with liquid, at least two electrodes electrically insulated from each other and in contact with said liquid, measuring means connected with said electrodes and providing a measuring signal whose amplitude is a function of the impedance between said electrodes, a detection circuit responsive to said measuring signal for measuring the amplitude of the variations of said measuring signal, and a threshold circuit responsive to said detection circuit for supplying an informative signal whenever said amplitude of variation becomes smaller than a predetermined threshold.

4,212,006

CRANE LOAD ALARM WITH COMPENSATION FOR DIRECTION OF ROPE MOVEMENT

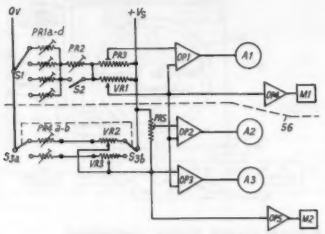
William A. Cakebread, and Graham R. Pryke, both of St. Leonards-on-Sea, England, assignors to B & A Engineering Company Ltd., Hastings, England

Filed Jan. 26, 1979, Ser. No. 7,354

Claims priority, application United Kingdom, Jan. 26, 1978, 3259/78

Int. Cl.[2] G08B *21/00*

U.S. Cl. 340—685 20 Claims



1. A load weighing device for cranes, said device comprising a dynamometer interposed in the crane rope which is operable to produce an output signal indicative of the tension in the rope caused by a load on the crane hook, a rope direction sensing element for sensing the direction of rope motion through the dynamometer and means for modifying the dynamometer output signal in accordance with the direction of rope motion as sensed by said direction sensing element.

4,212,007

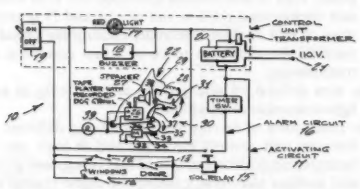
COMBINED BURGLAR FRIGHTENING DEVICE AND ALARM

Daniel Reyes, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Sep. 30, 1976, Ser. No. 728,434

Int. Cl.[2] G08B *13/08*

U.S. Cl. 340—691 4 Claims



1. A burglar frightening device and alarm, comprising an electric circuit having a switch normally maintained in open position by contact with a closure to a building access opening, said switch being biased to a closed position whereby upon opening of said closure, said switch moves to the closed position to activate said circuit, including an alarm and animal simulating mechanism electrically connected to said circuit, wherein said mechanism includes means for simulating movements and sounds emitted by an animal about to attack, whereby opening movement of the closure results in actuation of both said alarm and mechanism.

4,212,008

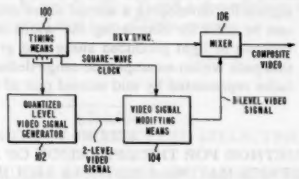
CIRCUIT FOR DISPLAYING CHARACTERS ON LIMITED BANDWIDTH, RASTER SCANNED DISPLAY

Robert S. Hopkins, Jr., Marlton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 24, 1978, Ser. No. 909,039

Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—723 10 Claims



1. In apparatus including timing means and video-signal generating means for deriving a quantized-level video signal for use in displaying character patterns on a television display device, wherein said quantized-level video signal includes a background level and a character-pattern delineating level which is different from said background level, any transition in level of said video signal only occurring at an end of an integral number of one or more entire periods of an elemental timing signal; the combination therewith comprising:

video-signal modifying means responsive to the occurrence of any given transition in at least one certain direction between a background level and a character-pattern delineating level of said video signal for changing the value of said character-pattern delineating level with respect to said background level to increase the difference therebetween for that given entire elemental timing period of said character-pattern delineating level of said video signal which is contiguous with said given transition.

4,212,009

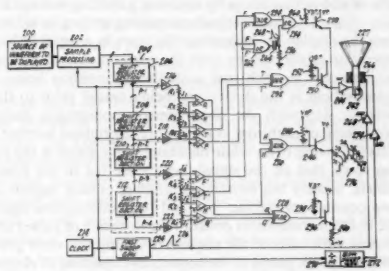
SMOOTHING A RASTER DISPLAY

George L. Adleman, Brockton, and Robert L. Stettiner, Lexington, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 16, 1977, Ser. No. 852,176

Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—728 12 Claims



1. Apparatus for developing control signals that may be used with a display means to change the width of a pattern of light contrast along parallel paths in such manner that the display means may display a waveform intersecting said parallel paths in the form of a smooth line, said means for developing control signals comprising

sampling means responsive to a waveform to be displayed for successively producing sample signals, each sample signal representing the amplitude of the intersection of the

waveform to be displayed with a different one of a plurality of adjacent paths,

first means responsive to a first pair of said sample signals for developing a first set of control signals that can be used for increasing the width of the pattern of contrast in light produced along a given direction of a parallel path within an amplitude range defined by the amplitudes represented by said first pair of sample signals, and

second means responsive to a second pair of said sample signals for developing a second set of control signals that can be used for decreasing the width of the pattern of contrast in light produced along said given direction of said path within an amplitude range defined by the amplitudes represented by said second pair of sample signals.

4,212,010

METHOD FOR THE OPERATION OF A DISPLAY DEVICE HAVING A BISTABLE LIQUID CRYSTAL LAYER

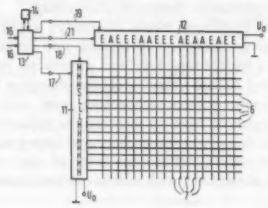
Karl H. Walter, Grafing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 28, 1977, Ser. No. 837,199

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1976, 2644449

Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—784 4 Claims



1. In a method for operating a display screen having a liquid crystal layer disposed between rows and columns of a conductor matrix, said liquid crystal being switched from a first optical state to a second optical state by applying a voltage higher than an upper threshold voltage U_{12}, being switched from a second to the first optical state by applying a voltage lower than a lower threshold voltage U_{21} and being maintained in one of said optical states by applying a holding voltage U_h with $U_{21}<U_h<U_{12}$, said method comprising writing-in information into the display by addressing the rows in a serial fashion and operation of the column with the relevant row data in parallel with respect to each row with the information being subsequently held in the device and being erased prior to the next write-in step with the improvements comprising during the addressing of each row erasing a predetermined number of the next following rows while maintaining the states in the remaining rows, that all the signals which are fed to the conductor matrix, namely the switching, holding, erasing signals on the row conductors and the "on" and "off" information signals for the column conductors consist of a sequence of pulses or pulse groups with each of the sequences having the same period of duration T, all pulses of the sequences consisting of elementary pulses having a magnitude U_0 and a duration $T/2m$ where m is a natural number and the interval of time between consecutive pulses being shorter than the shortest transition time of the layer between the two optical states, the row addressing time t being at least equal to the transition time of the layer from the second to the first optical state, so that effective voltages at the matrix point operate on the layer during the addressing time, said effective voltages, namely the two write-in voltages $U_{s/on}$, $U_{s/off}$, the holding voltage U_h and the erasing voltage U_l being produced solely by the combination of suitable signal pulses or signal pulse groups of the elementary pulses from the pulses on the row and column conductors.

4,212,011

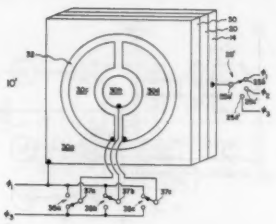
MULTIMODE LIQUID CRYSTAL DISPLAY

Wesley K. Waldron, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1978, Ser. No. 937,953

Int. Cl.[2] G06F *3/14;* G09F *9/32*

U.S. Cl. 340—784 9 Claims



1. A liquid crystal display, comprising:

at least one liquid crystal cell, each cell including a continous control electrode;

another electrode spaced from said control electrode and having an insulative groove formed therein to define N independent segment portions, where N is an integer greater than zero, each spatially and electrically separated from each other and from a remaining background portion;

a layer of liquid crystal material filling the volume between said control electrode and said another electrode;

sources of first and second driving voltages, each voltage having substantially identical frequencies, amplitudes and waveshapes, but having a phase, relative to an arbitrary reference, different from the phase of the other driving voltage;

the first source being permanently connected to the background portion of said another electrode;

first means for selectively connecting each of said N segment portions of said another electrode individually to one or the other of the voltages from said first and second voltage sources; and

second means for selecting connecting each one of said first and second voltage sources individually to said control electrode;

the connection of driving voltages of substantially identical phase, both to said control electrode and to at least one of said background portion and one of said N segment portions of said another electrode, causing the liquid crystal material therebetween to be in a first condition of light transmission;

the area defined by said groove always being in said first light-transmissive condition;

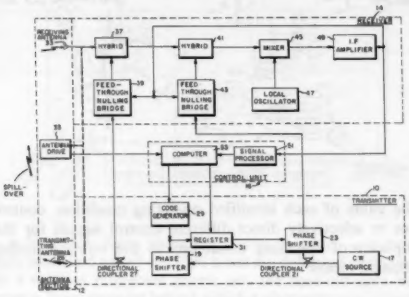
the connection of driving voltages having different phases, between said control electrode and at least one of said background portion and one of said N segment portions of said another electrode, causing the liquid crystal material therebetween to be in a remaining condition of light transmission;

the voltage applied by said first selective connecting means to said control electrode selectively operating said cell with a selectable one of dark and bright background in the area defined by of said background electrode portion, and the voltage applied by said second selective connecting means to each of said segment electrode portions selectively operating said cell with a selectable one of dark and bright segments in the area defined by the associated segment electrode portion, to cause the cell to display a selected one of a total of 2^{N+1} different indicia.

4,212,012
CONTINUOUS WAVE RADAR

David V. Manoogian, Lynnfield, and Roderic J. Procaccino, Westwood, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 18, 1978, Ser. No. 970,600
Int. Cl.[2] G01S 9/37
U.S. Cl. 343—7 A 1 Claim



1. The method of operating a continuous wave radar which transmits a modulated continuous wave signal in a directional beam from a transmitting antenna trainable in azimuth and receives clutter signals from clutter at different ranges as the azimuth is changed, such method comprising the steps of:

(a) determining, at each position in azimuth of the transmitting antenna, the range of any clutter in the far-field and storing a timing signal representative of the propagation delay of the clutter causing the greatest far field signal;

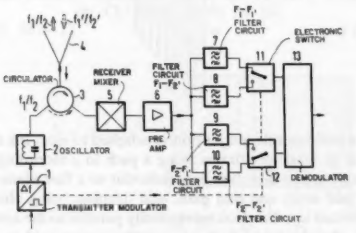
(b) storing a reference signal representative of the modulation of the transmitted signal; and

(c) reproducing, in response to the timing signal for each position in azimuth, the reference signal and nulling the then received clutter signals.

4,212,013
DUPLEX-TRANSMITTER RECEIVER ARRANGEMENT

Gunter Biethan, Neuried, and Peter Kloeber, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,363
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744212
Int. Cl.[2] H04B 1/40
U.S. Cl. 370—30 6 Claims

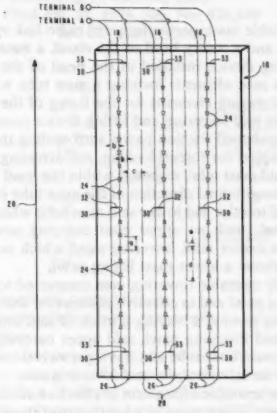


6. A transmitter-receiver apparatus having only one oscillator for the transmitter of a digitally modulated radio system for communication transmission between a plurality of transmitter-receiver stations mounted at prescribed distances for bidirectional communication and telemetry transmission, comprising, a circulator, an antenna connected to said circulator, a first oscillator tunable to frequencies f_1/f_2 connected to said circulator for radiating signals at frequencies f_1 and f_2 from said antenna, a first receiver mixer connected to said circulator and receiving signals at least at frequencies f_1' and f_2' from said antenna and signals at frequencies f_1 and f_2 from said first oscillator, means for modulating said first oscillator, a second receiver mixer receiving the output of said first mixer, an auxiliary oscillator supplying an input to said second receiver mixer at a frequency of f_3, and a pair of filter circuits connected to the output of said second receiver mixer and having center frequencies of f_2-f_1' and $f_2-f_2'-f_3$ and a demodulator connected to the output of said pair of filter circuits.

4,212,014
ELECTRONICALLY CONTROLLED DIELECTRIC PANEL LENS

Claude Chekroun, Bures sur Yvette, France, assignor to Societe d'Etude du Radar.t, Orsay, France

Filed Jun. 22, 1978, Ser. No. 918,053
Claims priority, application France, Jun. 24, 1977, 77 19365
Int. Cl.[2] H01Q 19/06
U.S. Cl. 343—754 23 Claims



1. In a lens apparatus for phase shifting a wave transmitted by a microwave radiating source having at least one dielectric panel with said at least one dielectric panel including first conductive leads and a plurality of switch means having conductive and non-conductive states mounted on said first conductive leads with each switch means spaced apart on said first conductive leads one from another by a distance which enables shifting the phase of said transmitted wave by selectively controlling the conductive state of said switch means, the improvement comprising:

a. second conductive leads in said panel adjacent to and parallel with said first conductive leads;

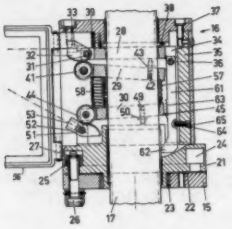
b. said switch means of each first conductive lead being divided at junctions into groups, the switch means of each group being connected in the same polar direction thereby defining a polarity for each group and successive groups of each first conductive lead being of alternate polarity; and

c. means for coupling said groups of each first conductive lead in parallel between two second conductive leads with the polarity of each parallel connected group being in the same direction, whereby selective biasing of each two second conducting leads assures each respective first conductive lead being selectively rendered continuous and discontinuous by said switch means.

4,212,015
PORTABLE MAST FOR RADIO LINK SYSTEMS

Robert Graf, Untersiggenthal, and René Meier, Neuenhof, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Aug. 1, 1978, Ser. No. 930,007
Claims priority, application Switzerland, Aug. 4, 1977, 9566/77
Int. Cl.[2] H01Q 1/10
U.S. Cl. 343—883 2 Claims



1. A portable mast, particularly for radio link systems, having a stand and a rotary head of the stand, a mast tube lifting and lowering device installed in the head of the stand, telescopic mast tube elements forming a mast tube which can be locked, and staying elements for the fixing of the mast at the site, wherein said lowering and lifting device comprises:

three ring-shaped friction pawls surrounding the mast tube and adapted for forced-locking, self-arresting connection with said mast tube, disposed within the head of the stand in the longitudinal direction of the mast tube elements and adapted to raise and lower said mast tube when said pawls are tilted, with an upper mast carrying pawl disposed above a center mast lowering pawl which in turn is disposed above a lower mast lifting pawl;

a manually operable lowering cam connected to said upper carrying pawl and in effective connection with said center lowering pawl at a bearing portion of said lowering pawl to tilt said lowering pawl, said upper carrying pawl supporting said mast tube and having a swivel connection to a pin at its side opposite said lowering cam;

a manually operable lifting cam in effective connection with said lower lifting pawl at a bearing portion of said lifting pawl and having a swivel connection in the head of the stand;

a plurality of spring elements provided between the lower lifting pawl and the center lowering pawl for holding said lower lifting pawl and said center lowering pawl in contact with said lowering and lifting cams; and

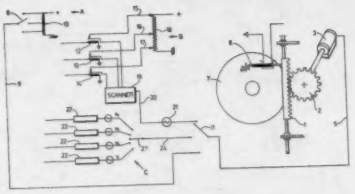
catch lever means for fixing the lifting pawl as soon as a lower face of a mast tube element not being in contact with the adjacent face of a next following mast tube element, has reached a certain position within the head of the stand.

4,212,016
VEHICLE MULTICONDITION RECORDING SYSTEM

Herman Ruhl, 30 Queen Elizabeth Blvd., Toronto, Ontario, Canada (M8Z 2T6)

Filed Sep. 29, 1977, Ser. No. 837,503
Int. Cl.[2] G01D 9/28, 15/16
U.S. Cl. 346—62 15 Claims

1. Vehicle recording system for recording a multiplicity of operating conditions in a chart characterized by the combination of recording means for inscribing on the chart at essentially right angles to its direction of movement, servocontrolled positioning means for positioning and moving said recording means to recording positions in response to control signals which are the result of two separate input signals combined with one another to provide said control signals, one of said input signals identifying a particular operating condition, the other of said input signals identifying the value of that particular operating condition for simultaneous appropriate positioning of the recording means on the chart and recording

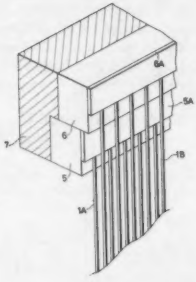


of the value of each identified operating condition, control means to selectively direct different control signals for the multiplicity of operating conditions to the servocontrolled positioning means.

4,212,017
DEFLECTION ELECTRODE ASSEMBLY FOR MULTI-NOZZLE INK JET PRINTERS

Masayoshi Tamai, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,758
Claims priority, application Japan, Dec. 8, 1977, 52-146590
Int. Cl.[2] G01D 15/18
U.S. Cl. 346—75 4 Claims

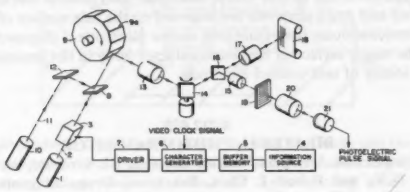


1. In a multi-nozzle ink jet printer adapted to eject ink droplets from an array of nozzles along a path to a recording medium moving in a direction perpendicular to a first plane containing said array and said path, said droplets being charged and deflected in a direction substantially parallel to the array of nozzles whereby said ink droplets strike against said moving recording medium in a predetermined position, the improvement comprising at least two deflection electrode assemblies spaced apart along the path of said droplets; each assembly having a plurality of parallel conductive round wires disposed in a second plane perpendicular to said first plane in a spaced relationship from said nozzle array, said conductive wires being alternately charged to form two groups of conductive wires between which a deflection voltage is applied.

4,212,018
LASER BEAM RECORDING SYSTEM

Masahiro Ohnishi; Yuji Ohara, and Hiroshi Oono, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 15, 1979, Ser. No. 3,347
Claims priority, application Japan, Jan. 17, 1978, 53/3480
Int. Cl.[2] G01D *15/10, 9/42*
U.S. Cl. 346—76 L 8 Claims



1. In a laser beam recording system in which a recording light beam and a read-out light beam are deflected periodically by a rotating polygonal mirror and the read-out light beam scans a linear encoder behind which a photodetector is located whereby a photoelectric pulse signal is generated by the photodetector,

a video clock signal generating device for generating a video clock signal in synchronization with the photoelectric pulse signal, said video clock signal generating device comprising;

an oscillator for generating a clock signal,

a divider for dividing the clock signal into a reference pulse signal having a frequency of 1/n of that of the clock signal, where said n is an integral number, and

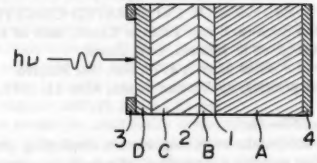
a phase comparator for detecting the displacement of the phase of said photoelectric pulse signal from that of said reference pulse signal and controlling said oscillator to make the phases of the photoelectric pulse signal and the reference pulse signal registered with each other,

whereby a video clock signal is generated which is synchronized with said photoelectric pulse signal and has a frequency of n-times as large as that of the photoelectric pulse signal, said video clock signal providing a video signal which is used to modulate the recording light beam.

4,212,019
AVALANCHE PHOTODIODE

Manabu Wataze; Kazuhisa Takahashi; Saburo Takamiya, and Shigeru Mitsui, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,639
Claims priority, application Japan, Jul. 19, 1977, 52-86843
Int. Cl.[2] H01L *29/90, 29/161*
U.S. Cl. 357—13 8 Claims



1. An avalanche photodiode comprising:

a first semiconductor layer of a selected conductivity type and being formed from a first semiconductor material; said first semiconductor layer being capable of converting incident radiation to electrons;

a second semiconductor layer located adjacent the side of said first semiconductor layer that is exposed to incident radiation, having the same conductivity type and being of the same semiconductor material as said first semiconductor layer; said second semiconductor layer having a higher impurity density than said first semiconductor layer;

a first electrode in operative contact with said second semiconductor material;

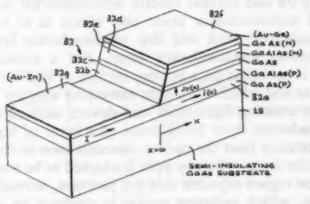
a third semiconductor layer, functioning as a carrier multiplying region, located on the other side of said first semiconductor layer and having the same conductivity type as said first semiconductor layer; said third semiconductor layer being formed from a second semiconductor material;

a fourth semiconductor layer of an opposite conductivity type located adjacent said third semiconductor; said fourth semiconductor layer being formed from said semiconductor material and having a higher impurity density than said third semiconductor layer; and a second electrode in operative contact with said fourth semiconductor layer.

4,212,020
SOLID STATE ELECTRO-OPTICAL DEVICES ON A SEMI-INSULATING SUBSTRATE

Amnon Yariv, San-Marino; Shlomo Margalit, and Chien-Ping Lee, both of Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jul. 21, 1978, Ser. No. 926,649
Int. Cl.[2] H01L *33/00*
U.S. Cl. 357—17 11 Claims



1. An arrangement comprising:

a GaAs semi-insulating layer, representing a substrate with a top surface,

a solid state laser structure on top of said substrate, said laser structure comprising first, second, third, fourth and fifth layers of GaAs N type, a ternary compound of GaAs of the N type, GaAs, a ternary compound of GaAs P type and GaAs P type, respectively, above said substrate, with said first layer extending beyond the other layers which form a mesa;

a first contact on top of said fifth layer,

a second contact on the top surface of said first layer, spaced apart from the other layers which form said mesa, and

electronic means wherein the first GaAs N type layer forms part thereof,

said electronic means including an additional contact, with said second contact being adjacent said mesa and the additional contact being spaced therefrom in a direction farther away from said mesa, said electronic means being substantially a Gunn oscillator.

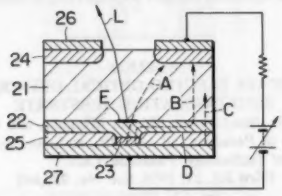
4,212,021
LIGHT EMITTING DEVICES

Yuichi Ono, Tokyo; Mitsuhiro Mori, Kokubunji; Makoto Morioka; Kazuhiro Ito, both of Tokyo; Masahiko Kawata, Yokohama, and Kazuhiro Kurata, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 817,681, Jul. 21, 1977, abandoned. This application May 22, 1979, Ser. No. 41,318
Claims priority, application Japan, Jul. 21, 1976, 86037/76
Int. Cl.[2] H01L *33/00*
U.S. Cl. 357—17 10 Claims

1. A light emitting device having a III-V compound semi-

conductor substrate which has a predetermined conductivity type, a III-V compound first semiconductor layer which is deposited on an upper surface of said III-V compound semiconductor substrate and which has the opposite conductivity type to that of said substrate, wherein a p-n junction is formed between said semiconductor substrate and said first semiconductor layer, a current control semiconductor layer which has the opposite conductivity type to that of said first semiconductor layer and which covers an upper surface of said first semiconductor layer and which has a hole therethrough, a second semiconductor layer positioned in said hole and contacting said first semiconductor layer, whereby current can flow through said current control semiconductor layer, said second semiconductor layer having the same conductivity type as said first semiconductor layer, a first electrode which is provided



directly on said current control semiconductor layer and said second semiconductor layer and which is in current flow communication with said first semiconductor layer through said second semiconductor layer, and a second electrode which is provided on a bottom surface of said semiconductor substrate and which has a light extracting window at its center part for emitting light from said device, said current control semiconductor layer being made of a layer of higher carrier concentration than the carrier concentration in the first semiconductor layer, whereby light is adapted to be emitted from a radiation region adjacent said p-n junction, normal to said p-n junction, which radiation region is confined by said current control semiconductor layer, and adapted to pass through the semiconductor substrate to said light extracting window, and wherein the bandgap of said semiconductor substrate is wider than that of said radiation region.

4,212,022

FIELD EFFECT TRANSISTOR WITH GATE AND DRAIN ELECTRODES ON THE SIDE SURFACE OF A MESA

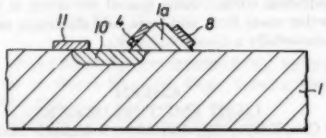
Heinz Beneking, Aachen, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Fed. Rep. of Germany

Continuation-in-part of Ser. No. 464,622, Apr. 26, 1974, abandoned. This application Jun. 6, 1975, Ser. No. 584,340

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1974, 2444489; Apr. 30, 1973, 2321895

Int. Cl.[2] **H01L** *29/80, 29/64, 29/06*

U.S. Cl. 357—22 **3 Claims**



1. In a semiconductor device including a semiconductor body of a first conductivity type, an ohmic electrode and a blocking electrode for said semiconductor body with one of said electrodes being disposed on the side surface of said semiconductor body and the other of said electrodes being disposed adjacent to said one electrode and on a major surface of said semiconductor body the improvement wherein: said device is a field effect transistor having a source electrode, a drain electrode and a control electrode contacting said semiconductor body with said control electrode being disposed between said source and drain electrodes; said semiconductor body is a thin semiconductor layer of uniform conductivity type and forms the controllable channel region of said transistor; said source and control electrodes constitute said ohmic and said blocking electrodes respectively and said drain electrode is the same type electrode as said source electrode; said control electrode and said drain electrode are disposed on the side surface of the semiconductor body; and said source electrode is disposed on the major surface of the semiconductor body in the immediate vicinity of said control electrode.

4,212,023

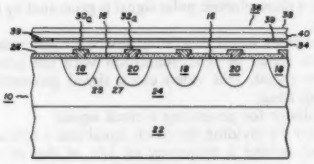
BILATERAL PHOTOTRANSISTOR

Hing C. Chu, Liverpool; William H. Sahm, III, Syracuse, both of N.Y., and Robert I. Chen, Beaverton, Oreg., assignors to General Electric Company, Auburn, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,098

Int. Cl.[2] **H01L** *31/12, 27/14*

U.S. Cl. 357—19 **19 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type having first and second opposed major surfaces;

a first semiconductor layer of the same conductivity as said substrate but characterized by a lower impurity concentration, said first layer epitaxially formed on first major surface;

first and second symmetrical, interdigitated semiconductor regions extending from a top surface of said first semiconductor layer into the bulk of said layer towards but not meeting the boundary between said first layer and said substrate, said first and second regions being of a second conductivity type opposite said first conductivity type; and

a radiation sensitive base region disposed between first and second symmetrical interdigitated regions.

4,212,024

SOLID-STATE SWITCHING CIRCUIT EMPLOYING PHOTON COUPLING SUITABLE FOR CONSTRUCTION IN FORM OF INTEGRATED CIRCUIT

Yoshitaka Sugawara, and Tatsuya Kamei, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed May 3, 1978, Ser. No. 902,498

Claims priority, application Japan, May 11, 1977, 52/53147

Int. Cl.[2] **H01L** *29/74*

U.S. Cl. 357—38 **4 Claims**

1. A solid-state switching circuit employing photon coupling, the switching operation of which is controlled by a control signal, comprising:

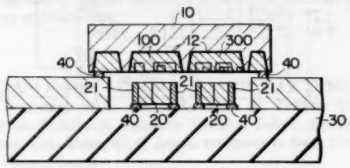
at least one light-emitting diode for radiating photons in response to the control signal supplied thereto;

a light-activated silicon controlled rectifier, the switching operation of which is controlled by the photons radiated from said light-emitting diode;

a transistor, the collector electrode and the emitter electrode of which are connected to the gate electrode and the

cathode electrode of said light-activated silicon controlled rectifier, respectively;

a diode connected between the n-base layer of said light-activated silicon controlled rectifier and the base electrode of said transistor; and



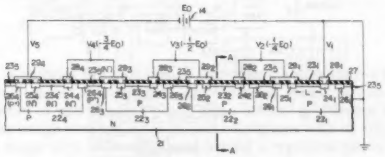
a photodiode connected between the base electrode and the emitter electrode of said transistor, and being activated by the photons radiated from said light-emitting diode, thereby said transistor being turned off in response to the appearance of the control signal.

4,212,025

VOLTAGE DIVIDING INTEGRATED CIRCUIT DEVICE

Masataka Hirasawa, Ayase; Akira Hashimoto, and Haruji Yamazaki, both of Yokohama, allof, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Jan. 31, 1978, Ser. No. 873,881
Claims priority, application Japan, Jan. 31, 1977, 52-9397
Int. Cl.[2] H01L *27/04*
U.S. Cl. 357—51 **3 Claims**



1. An integrated circuit voltage divider comprising:

a semiconductor substrate of a first conductivity type;

a plurality of first regions having a second conductivity type and separately formed in said substrate, each forming a PN junction with said substrate;

a plurality of second regions having said second conductivity type, each of said second regions formed in said substrate along said PN junctions formed by said substrate and a corresponding one of said first regions, and each of said second regions having an impurity concentration higher than the impurity concentration of said first regions;

a plurality of identical resistive regions having said first conductivity type, each of said resistive regions formed in a corresponding one of said first regions, and each of said resistive regions having first and second sides and first and second ends, said first and second sides of each resistive region being in contact with a corresponding one of said second regions; and

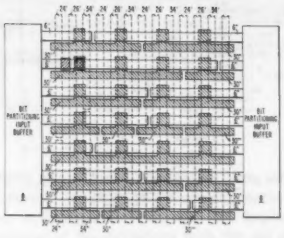
connection means for electrically connecting said resistive regions in series with one another, first ends connected to second ends, across a source of supply voltage to be divided, and for providing a precision voltage drop of said source voltage at said connected first and second ends of said resistive regions, said connection means including means for electrically connecting each first end of each of said resistive regions with said corresponding one of said second regions to prevent PN junctions formed by said resistive regions and said first regions from being forward-biased.

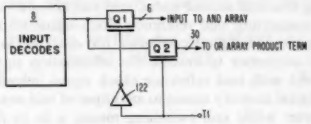
4,212,026

MERGED ARRAY PLA DEVICE, CIRCUIT, FABRICATION METHOD AND TESTING TECHNIQUE

P. S. Balasubramanian, Manassas; Claude R. Bertin, Oakton, and Stephen B. Greenspan, Reston, all of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 809,877, Jun. 24, 1977. This application Sep. 25, 1978, Ser. No. 945,745
Int. Cl.[2] H01L *27/02*
U.S. Cl. 357—41 **17 Claims**





2. A semiconductor structure for a programmed logic array having an AND array and an OR array of FET devices, comprising:

a semiconductor substrate of a first conductivity type;

a spaced parallel array of diffusion lines of a second conductivity type in said substrate;

a first insulating layer overlying said substrate having a first plurality of openings selectively defining FET gates for said OR array, second plurality of openings selectively defining FET drains for said AND array, and a third plurality of openings selectively defining FET gates in said AND array;

a first, spaced parallel array of conductor lines overlying said first insulator layer and oriented perpendicularly to said diffusion lines, having a conductor passing through one of said first openings to form the gate of a first FET device in said OR array and passing through one of said third openings proximate to said one of said first openings, to form a drain contact for a second contiguous FET device in said AND array;

a second insulating layer overlying said first array of conductor lines having a plurality of openings over said second openings in said first insulating layer;

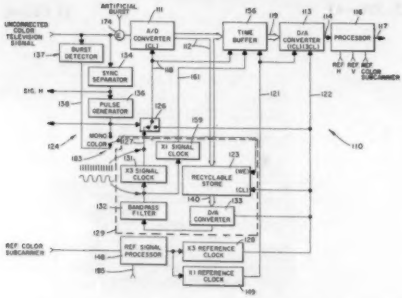
a second spaced, parallel array of conductor lines overlying said second insulator layer and oriented parallel with said first spaced parallel array of conductor lines, having a conductor passing through said opening in said second insulating layer to form the gate of said second FET device, forming an input to said AND array;

whereby a PLA is formed having a merged AND and OR array.

4,212,027
TIME BASE COMPENSATOR

Maurice G. Lemoine, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 464,269, Apr. 25, 1974, abandoned.
This application Mar. 12, 1975, Ser. No. 557,708
Int. Cl.[2] H04N 9/02
U.S. Cl. 358—8 89 Claims



1. A compensator for synchronizing relative to a reference clock signal an information signal having a timing component, comprising; an analog to digital converter receiving and digitally encoding said information signal in response to clock signals, reference clock signal source means, digital memory means including input and output means, switching means having first and second states, said switching means in its first state connecting said reference clock signal source means to said analog to digital converter for clocking said analog to digital converter to encode the information signal at a rate coherent with said reference clock signal, means connecting said digital memory means to an output of said analog to digital converter while said switching means is in its first state for storing and regenerating said timing component of said information signal, said switching means in its second state connecting the output of said digital memory means to said analog to digital converter for clocking said analog to digital converter to encode the information signal at a rate coherent with said timing component of said information signal, said switching means responsive to said information signal to assume temporarily its first state, and a digital to analog converter coupled to receive the output of said analog to digital converter for decoding the digitized information signal, said reference clock signal source means coupled to said digital to analog converter for clocking said digital to analog converter at a rate coherent with said reference signal.

4,212,028
PROCESSING PAL COLOR TELEVISION SIGNALS

John O. Drewery, Coulsdon, England, assignor to The Marconi Company Limited, Chelmsford and Standard Telephones and Cables Limited, London, both of, England

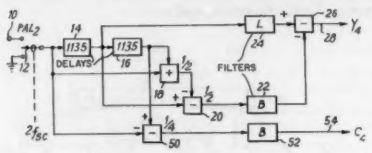
Filed Aug. 30, 1978, Ser. No. 938,028
Claims priority, application United Kingdom, Sep. 1, 1977, 36590/77
Int. Cl.[2] H04N 9/39
U.S. Cl. 358—11 8 Claims

1. A method of processing digital PAL colour television signals, comprising the steps of:

transcoding between (i) an encoded PAL signal sampled at twice the colour subcarrier frequency and (ii) a luminance signal sampled at twice the colour subcarrier frequency and/or a composite chrominance signal sampled at the colour subcarrier frequency and comprising the sum and difference of the quadrature colour signals on alternative lines;

said transcoding step comprising:

forming the output samples (a) over the chrominance bandwidth by linearly combining samples selected from three or more adjacent lines of the television signal, and (b) below the chrominance bandwidth by linearly combining



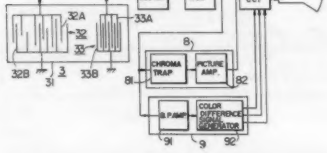
samples selected from the samples on at least one of the adjacent lines; and

filtering the output samples by means of a digital filter, to provide the desired output signal.

4,212,029
ELASTIC SURFACE WAVE FILTER FOR COLOR TELEVISION RECEIVER

Takeshi Murakami, and Katashi Hazama, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 16, 1977, Ser. No. 825,039
Claims priority, application Japan, Aug. 20, 1976, 51-98757
Int. Cl.[2] H04N 9/535
U.S. Cl. 358—21 R 10 Claims



10. In a color television receiver, comprising:

a signal source for generating a color television signal which comprises a color composite video signal including a chromaticity signal component, a luminosity component and a sound signal component;

a video detector for detecting said color composite video signal from said color television signal;

an elastic surface wave filter which provides said color television signal with a given amplitude characteristic and comprises a piezo-electric substrate permitting an elastic surface wave to be propagated, an input converter provided on said piezo-electric substrate for converting said color television signal to an elastic surface wave, and an output converter provided on said piezo-electric substrate for converting said elastic surface wave from said input converter again to a color composite video electric signal which includes said chromaticity signal component, said luminosity component, and said sound signal component and which is fed to said video detector;

a band pass amplifier for extracting said chromaticity signal component from said color composite video signal from said video detector and for amplifying the same; and

sound signal attenuating means provided in a signal transmission line from said signal source to said band pass amplifier for attenuating said sound signal component, and for causing a group delay distortion to said chromaticity signal component passing therethrough, said elastic surface wave filter being provided with an nonuniform group

delay characteristic which is symmetrical with a group delay characteristic given to said chromaticity signal component by said signal transmission line including said sound signal attenuating means and except for said elastic surface wave filter, whereby said signal transmission line including said elastic surface wave filter provides said chromaticity signal component with a uniform group delay characteristic.

4,212,030

BEAM INDEX COLOR CATHODE RAY TUBE

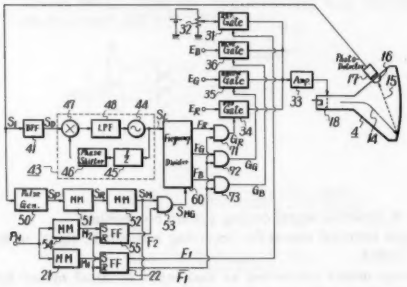
Akira Tooyama; Akio Ohkoshi, both of Tokyo; Takashi Tooyama, Kokubunji; Takahiro Yukawa, Tokyo, and Takashi Hosono, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 969,861

Claims priority, application Japan, Dec. 20, 1977, 52-153297

Int. Cl.[2] H04N *9/24*

U.S. Cl. 358—67 **21 Claims**



1. A cathode ray tube system comprising a cathode ray tube having means for forming an electron beam, means to vary the intensity of said electron beam, and a screen, said screen having an image area and a run-in area contiguous with an edge of said image area, said image area having a repetitive pattern of a plurality of groups of color phosphor elements arranged side-by-side with each element of each group producing light of a different color when excited, a first set of index stripes spaced apart in said image area in the direction in which said phosphor stripes are arranged side-by-side, a second set of index stripes in said run-in area, said first and second sets of index stripes having a pitch which is related to the pitch of said groups of color phosphor elements, means for applying to said intensity varying means a signal having variations indicative of desired variations of the response of said color phosphor elements, means for generating an index signal in response to the scanning by said electron beam of said second set of index stripes, at least one cycle of said index signal having a longer period than others thereof, means responsive to the longer period of said at least one cycle to synchronize the time-phase position of said means for varying the intensity of the beam at the beginning of the scanning of said image area of the screen by said beam.

4,212,031

METHOD OF ALIGNING A BODY

Alfons Schmitt, Talheim; Diether Utz, Öhringen, and Klaus Schäfer, Heilbronn, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

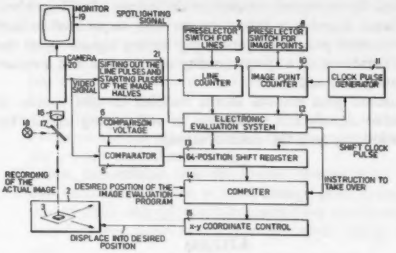
Filed Sep. 29, 1977, Ser. No. 837,890

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643809

Int. Cl.[2] G05D *3/00*

U.S. Cl. 358—101 **15 Claims**

1. A method of aligning a body in a desired position, comprising producing an image of the actual location of at least one alignment position of the body and breaking this actual location image down into image points the spacing of which is smaller than the required adjustment accuracy; digitalizing and storing the information content of these image points in a data processing system containing the desired location of the one



alignment position also stored in digitalized form; comparing the actual and desired locations of the one alignment position and calculating deviations therebetween; and displacing the body by the amount of the deviations with the aid of movement devices controlled by the data processing system.

4,212,032

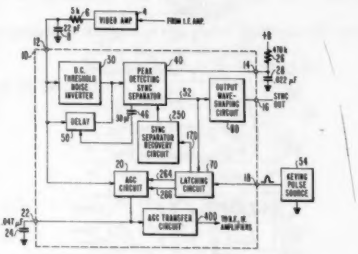
SYNCHRONIZATION AND GAIN CONTROL CIRCUIT

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,822

Int. Cl.[2] H04N *5/52*

U.S. Cl. 358—177 **8 Claims**



1. In a television receiver, apparatus comprising:

a source of video signals which may be contaminated with impulse noise, said video signals containing synchronizing signal components;

means coupled to said source of video signals for inverting the impulse noise in said video signals which exceeds a predetermined threshold level;

means coupled to said source of video signals for delaying said video signals;

means coupled to the output of said noise inverting means and the output of said delaying means for combining said delayed video signals with said inverted impulse noise to produce noise cancelled video signals;

peak detecting means direct current coupled to the output of said combining means for generating a reference voltage related to the synchronizing signal components of said noise cancelled video signals;

a comparator responsive to said noise cancelled video signals and said reference voltage for generating synchronizing signal pulses when the synchronizing signal compo-

nents of said video signals exceed said reference voltage level;

a source of recurrent pulses normally in a substantially constant phase relationship with said synchronizing signal pulses;

means direct current coupled to the output of said synchronizing signal generating means and responsive to said recurrent pulses for producing keying signals upon the coincidence of a synchronizing signal pulse and a recurrent pulse; and

automatic gain control means coupled to said source of video signals and responsive to said keying signals for producing an AGC control signal.

4,212,033

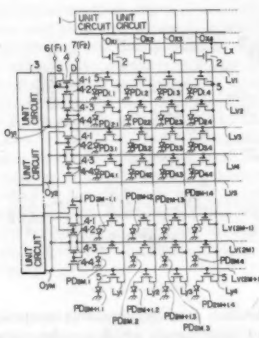
Patent Not Issued For This Number

4,212,034

SOLID-STATE IMAGE PICKUP DEVICE

Norio Kokie, Tokyo; Masaharu Kubo, and Shusaku Nagahara, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 8, 1978, Ser. No. 931,967
Claims priority, application Japan, Aug. 10, 1977, 52-95039
Int. Cl.[2] H04N *3/14*
U.S. Cl. 358—213 **5 Claims**



1. In an image pickup device having

a plurality of photoelectric conversion elements arranged in a two-dimensional pattern,

horizontal and vertical switching means for selectively energizing said photoelectric conversion elements, and

horizontal and vertical scanning means for controlling the respective horizontal and vertical switching means,

the improvement wherein said vertical scanning means comprises

means for selecting pairs of row lines and being composed of a unit circuit including four switches coupled to respective trios of said row lines and

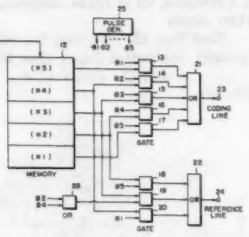
means for applying a first field change-over signal to two of said four switches and for applying a second change-over signal to the other two switches of said four switches.

4,212,035

FACSIMILE SIGNAL CODING SYSTEM

Yukio Nakagome, Yokohama; Hiroichi Teramura, Tokyo; Yasuhiro Yamazaki, Hiratsuka, and Yasushi Wakahara, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Jun. 7, 1978, Ser. No. 913,038
Claims priority, application Japan, Jun. 16, 1977, 52-70438
Int. Cl.[2] H04N *7/12*
U.S. Cl. 358—260 **3 Claims**



1. A facsimile signal coding system comprising:

input terminal means for receiving a facsimile signal to be coded;

group means connected to said input terminal means for dividing said input facsimile signal into a plurality of scanning groups each including a number of scanning lines;

coding means connected to said group means for coding each of said scanning line groups, so that a substantially central one of the scanning lines of each group is encoded by a coding method without referring to information of a scanning line adjacent to the central scanning line, so that information of the remaining lines above the central scanning line is sequentially encoded upwardly from the central scanning line using information of the just precedently encoded line as reference information for each scanning line to be coded, and so that information of the remaining lines below the central scanning line is sequentially encoded downwardly from the central scanning line using information of the just precedently encoded line as reference information for each scanning line to be coded; and

output terminal means connected to said coding means for obtaining the coded output of said facsimile signal.

4,212,036

METHOD FOR CODING ADDRESSES OF INFORMATION CHANGE PICTURE ELEMENTS IN FACSIMILE SIGNAL

Yukio Nakagome, Yokohama; Hiroichi Teramura, Tokyo; Yasuhiro Yamazaki, Hiratsuka, and Yasushi Wakahara, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

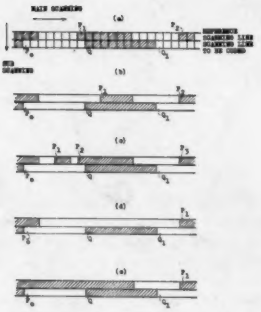
Filed Nov. 10, 1976, Ser. No. 740,716
Claims priority, application Japan, Nov. 10, 1975, 50-134978
Int. Cl.[2] H04N *1/40, 7/12*
U.S. Cl. 358—261 **2 Claims**

1. A method for coding addresses of information change picture elements each having information different from that of

the immediately preceding picture element in a facsimile signal obtained by successively scanning an original picture, comprising steps of:

classifying said information change picture elements into deviation change points each having a high correlation to a final reference change point selected from coded information picture elements, and new change points each having substantially no correlation to the reference change point, said deviation change point being defined as a change point to be coded starting a run of one information type in an instant scanning line and having in an immediately preceding scanning line a run of the same information type overlying the run started by the deviation change point but which does not overlie a preceding run of the same information type in the instant scanning line;

receiving each of said deviation change points and coding the address of its final reference change point and the direction and length of each deviation of said deviation change points from the corresponding final reference change point; and



receiving said new change points and coding each distance to new change point from the immediately preceding information change picture element wherein said deviation change points and the reference change point thereof are determined by

first, searching a change point next to the instant change point to be coded on the instant scanning line to be coded;

secondly, checking whether or not the information of the picture element just above the instant change point to be coded is the same as the information of the instant change point and skipping to the following seventh step when the former has information different from that of the latter;

thirdly, searching a change point in a direction opposite to the scanning direction on a reference scanning line immediately preceding the instant scanning line from a picture element just above the instant change point to a picture element just above a change point immediately preceding the instant picture element;

fourthly, determining that the instant change point is not the deviation change point when no change point is found at the third step of searching;

fifthly, determining that the instant change point is the deviation change point when a change point is found at the third step of searching and then employing the found change point as the final reference change point;

sixthly, checking further in the left direction from the final reference change point to a picture element just above a change point immediately preceding the instant change point to count the number of change points of the same change direction as the instant change point so as to obtain the address of the final reference change point;

seventhly, searching a change point on the reference scanning line in the scanning direction from a picture element just above the instant change point to a picture element just above a change point immediately succeeding the instant change point;

eightly, determining that the instant change point is not the deviation change point when no change point is found at the seventh step of searching;

ninethly, determining that the instant change point is the deviation change point when a change point is found at the seventh step of searching and then employing the found change point as the final reference change point; and

tenthly, skipping to the sixth step.

4,212,037

METHOD FOR SCANNING A CARD WITH VIDEO SIGNAL

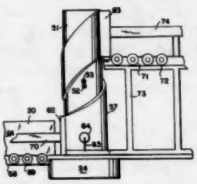
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 665,281, Mar. 9, 1976, Pat. No. 4,084,198, which is a continuation-in-part of Ser. No. 458,879, Apr. 8, 1974, Pat. No. 3,943,563, which is a continuation-in-part of Ser. No. 286,056, Sep. 5, 1972, Pat. No. 3,803,350, which is a continuation-in-part of Ser. No. 83,239, Oct. 22, 1970, abandoned, which is a continuation of Ser. No. 807,877, Jun. 20, 1977, abandoned. This application Mar. 10, 1978, Ser. No. 885,264

The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.

Int. Cl.[2] H04N *5/78*; G11B *25/04*

U.S. Cl. 360—33 **8 Claims**



1. A method of transducing information with respect to a record card comprising:

feeding a magnetic record card containing image information recordings extending along parallel tracks of said card in a flat condition into a card reading device,

automatically arcuately deforming said record card as it is fed through said card reading device,

rotating a magnetic transducing means in a first direction against the surface of the arcuately deformed record card while effecting relative movement between said record card and said rotating transducing means in a second direction in a manner to cause said transducing means to scan consecutive record tracks of said record card which tracks extend transverse to the longitudinal axis of the card, and

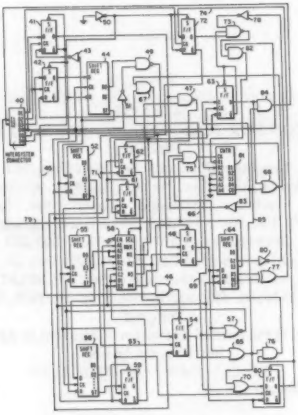
operating said magnetic transducing means as it scans selected tracks of said record card in a manner to cause said transducing means to generate signals on its output, which signals are representative of the recordings provide on the selected tracks so scanned to the exclusion of information recorded on the other tracks of the card and passing the signals generated in scanning said selected tracks to a signal processing means, and applying said signals to modulate an image generating means to generate an image representative of selected information recorded on said card.

4,212,038

DOUBLE DENSITY READ RECOVERY

Donald J. Rathbun, Andover, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 3, 1978, Ser. No. 866,441
Int. Cl.[2] H03K *13/24*; G11B *5/09*
U.S. Cl. 360—41 **3 Claims**



1. A logic read recovery system compatible with integrated circuit implementation and requiring no tuning adjustments for converting an MFM encoded information stream characterized by plural information bit cells received from a mass storage medium to an NRZ information stream for transfer through a data format unit to a mass storage controller, which comprises:

(a) bit cell access means in electrical communication with said storage medium for providing a plural information bit cell window for sensing said MFM information stream;

(b) multiplexer means receiving selected samples of said MFM information stream from said bit cell access means for supplying timing strobes to control the operation of said read recovery system;

(c) information identification means responsive to said multiplexer means and said bit cell access means for indicating the presence of clock bits, data bits and logic zero data in said MFM information stream;

(d) synchronization strobe generator means in electrical communication with said information identification means and said data format unit for removing an information bit cell from said bit access means upon the identification of a clock bit or a data bit in said information bit cell;

(e) address mark detection means in electrical communication with said multiplexer means, said bit cell access means and said strobe generator means for detecting an address mark indicating the presence of a data field in said MFM information stream and for inhibiting both the identification of clock bits and the transfer of NRZ information to said storage controller until after said address mark is detected; and

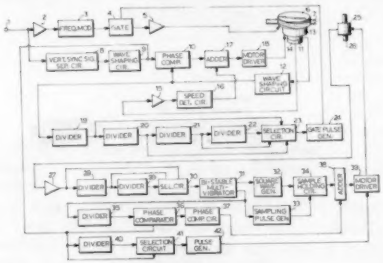
(f) NRZ conversion means in electrical communication with said information identification means and said address mark detection means and responsive to said strobe generator means for issuing a logic one level when a data bit is identified, and a logic zero level when either a clock bit or logic zero data is identified in said MFM information stream to form said NRZ information stream.

4,212,039

VTR TAPE DRIVE SYSTEM

Minoru Koda, Hirakata, Japan, assignor to Matsushita Electrical Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 733,936, Oct. 19, 1976, abandoned.
This application Jun. 12, 1978, Ser. No. 915,304
Claims priority, application Japan, Oct. 20, 1975, 50-126643
Int. Cl.[2] G11B *15/18*
U.S. Cl. 360—73 **3 Claims**



1. A tape driving system for a magnetic recording and reproducing apparatus in which a video signal is recorded intermittently by a rotary magnetic head and an audio signal is recorded continuously on a magnetic tape, respectively, said system comprising:

a brushless DC motor for moving the magnetic tape at various tape moving speeds and having a rotor, a stator core having main windings wound thereon and opposed to said rotor and a position detector for detecting the rotational position of said rotor and producing a rotor position signal;

a pulse generating means for generating a pulse signal;

an integrating circuit connected to said pulse generating means for producing a modified pulse signal from said pulse signal by slowing the rise time and the fall time of said pulse signal;

a driving source selecting means having a first input connected to said position detector, a second input connected to said integrating circuit and an output, for selectively connecting said rotor position signal or said modified pulse signal to said output thereof; and

a current supply means connected to said output of said driving source selecting means and said brushless DC motor, for supplying current to said main windings of said brushless DC motor according to said signal supplied thereto by said output of said driving source selection means, whereby said brushless DC motor is driven as a conventional brushless DC motor in a high speed range of tape moving speeds when said rotor position signal is applied thereto and said brushless DC motor is driven as a pulse motor in a low speed range of tape moving speeds when said modified pulse signal is applied thereto, the highest speed in said low speed range being lower than the lowest speed in said high speed range.

4,212,040

TAPE RECORDER WITH SINGLE CONTROL ACTIVATING MEMBER

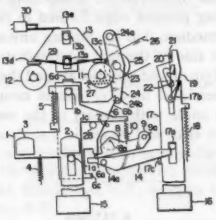
Masashi Yoshida, Nakaminato, and Yasuo Iino, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 10, 1978, Ser. No. 923,196

Claims priority, application Japan, Jul. 11, 1977, 52-82001; Sep. 30, 1977, 52-130545[U]

Int. Cl.[2] G11B *15/22, 5/54, 21/22*

U.S. Cl. 360—96.3 **2 Claims**



1. In a tape recorder of the type having a head base plate carrying at least one magnetic head mounted upon said head base plate and movable between a playback position and a stop position, said head base plate being urged toward the stop position by a first elastic member, a capstan for feeding the tape at fixed speed, a pinch roller arm rotatably supporting a pinch roller opposed to said capstan, a pair of reel mounts for taking up and supplying the tape respectively, a take-up arm rotatably supporting a take-up roller, and a brake plate for applying the braking force to said pair of reel mounts; the improvement comprising: a control board which is biased toward said playback position by a second elastic member connected between said control board and said head base plate, and which has a stopping member for defining a relative position of said control board with respect to said head base plate against said second elastic member, said control board and said head base plate being movable in a state maintaining said relative position when said control board moves toward said play back position, the control board itself being movable independently of said head base plate toward said stop position in opposition to the biasing of said second elastic member by an external operation after said control board has been located at said playback position, and said control board being a single member including a first control section coacting with said pinch roller arm to move said pinch roller arm toward and away from said capstan, a second control section coacting with said take-up arm to move said take-up arm toward and away from said take-up reel mount, and a third control section coacting with said brake plate to move said brake plate toward and away from said reel mounts.

4,212,041

APPARATUS AND METHOD FOR REMOVING THE EFFECT OF INTERFERENCE MAGNETIC FIELDS IN A MAGNETIC TRANSDUCER DEVICE FOR DETECTING INFORMATION MAGNETICALLY CODED ON A CARRIER

Jean-Pierre Lazzari, Montfort-L'Amaury, and Michel Helle, Marcq, both of France, assignors to Compagnie Internationale pour l'Informatique, Paris, France

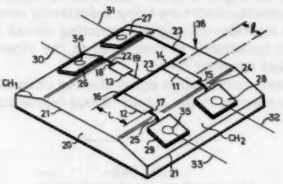
Filed Apr. 24, 1978, Ser. No. 899,383

Claims priority, application France, Apr. 29, 1977, 77 13026

Int. Cl.[2] G11B *5/12, 5/20, 5/30*

U.S. Cl. 360—113 **25 Claims**

1. A magnetic transducer for detecting information magnetically coded on a carrier adapted to be passed in front of the transducer comprising a substrate, at least one magnetoresistive detecting element on said substrate having a surface parallel to the plane in which the carrier moves for detecting the information coded on the carrier; a magnetoresistive compensating element, said compensating element being positioned with respect to said detecting element such that said compensating element is not subject to the magnetic leakage field of said coded information as it passes in front of said transducer,



but is subject to the same interference magnetic fields as the detecting element and the voltages developed across the detecting and compensating elements in response to the effect on them of the interference magnetic fields is the same.

4,212,042

DEVICE FOR RECOVERING VIDEO INFORMATION FROM MAGNETIC TAPE

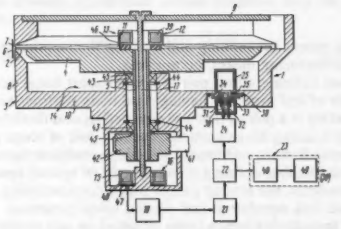
Alexandr G. Koshelev, Leninsky prospekt, 189, kv. 87; Svyatoslav D. Kretov, Leninsky prospekt, 153, kv. 59, and Konstantin A. Lavrentiev, ulitsa Kutsygina, 6, kv. 97, all of Voronezh, U.S.S.R.

Filed Dec. 19, 1978, Ser. No. 971,032

Claims priority, application U.S.S.R., Dec. 28, 1977, 2555851

Int. Cl.[2] G11B *5/52, 15/12*

U.S. Cl. 360—108 **7 Claims**



1. A device for recovering video information from magnetic tape comprising:

an assembly including magnetic heads and having a current-carrying casing formed with a bottom, walls and a cover, said magnetic heads being arranged within said casing in a manner allowing rotation and coupling thereof to said magnetic tape through a slot in one of said walls;

a hollow shaft secured to said current-carrying casing and mounting said magnetic heads;

a slip ring enclosed within said casing and having a rotor and stator each of which includes a closed core and a winding wound on said core, said winding of said rotor being electrically coupled to said magnetic heads;

a current-carrying element arranged within said shaft and connected to said bottom and said cover so that the current-carrying element, said cover, said walls and said bottom form a closed three-dimensional turn coupling said windings of said rotor and said stator;

a step-up transformer electrically coupled to said winding of said stator;

a first reproduction signal correcting circuit electrically coupled to said step-up transformer;

a reproduction amplifier having an input and an output, said input being connected to the first reproduction signal correcting circuit;

a second reproduction signal correcting circuit connected to said output of said reproduction amplifier;

a short-circuited turn consisting of a first and a second portion, the first portion of said turn being arranged within said current-carrying casing and the second portion thereof arranged beyond said current-carrying casing, said short-circuited turn being inductively coupled to the second reproduction signal correcting circuit and having a lower inductance as compared to the closed three-dimensional coupling turn;

a subsequent reproduction signal shaping channel having an input connected to the output of said reproduction amplifier.

4,212,043

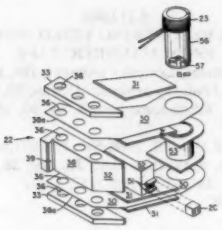
MAGNETIC TRANSDUCING

Billy R. Baker, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 1, 1978, Ser. No. 956,777

Int. Cl.[2] G11B *5/48, 21/18, 21/24*

U.S. Cl. 360—104 **7 Claims**



1. A mount for holding and varying the position of a magnetic transducing means, comprising:

a base defining a first pair of spaced-apart hinge positions;

a pair of leaf members having rigid body portions and terminating in a pair of first and a pair of second flexibly springily bending hinge portions, the first pair of hinge portions being fixed to said base at said hinge positions thereon; and

a link member defining a second pair of spaced-apart hinge positions, the second pair of hinge portions being fixed to said link member at said second hinge positions;

said transducing means being mounted on said mount remote from said base.

4,212,044

PLATFORM FOR MAGNETIC TRANSDUCERS HAVING DUST DIVERTER MEANS

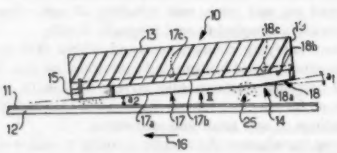
Michel Plotto, Plaisir, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France

Filed Nov. 8, 1978, Ser. No. 958,840

Claims priority, application France, Nov. 18, 1977, 77 34801

Int. Cl.[2] G11B *5/60, 5/10, 17/32*

U.S. Cl. 360—103 **12 Claims**



1. In a transducer platform for reading and writing from and onto a data carrier adapted to be driven past the platform from front to rear along its lengthwise dimension, said platform having major face adapted to be disposed adjacent the data carrier, said major face including a plurality of skids including at least two symmetrically disposed outer skids defining the flight surface of the platform and at least one intermediate skid having a magnetic transducer including an air gap to enable data to be read from and written onto the data carrier by said transducer, said skids having a major dimension parallel to the lengthwise dimension of said platform and having a front edge and a rear edge, the rear edge corresponding to the rear of the platform with reference to the direction of movement of the data carrier the improvement comprising a diverter means having a leading pointed edge formed in the front of said at least one intermediate skid for forcing unwanted contaminant material to the side of the said intermediate skid and thus to minimize build-up of said material around the skid and adjacent the data carrier, said diverter means comprising a surface disposed at an angle with respect to the major dimension of said at least one skid, said magnetic transducer being disposed adjacent the trailing edge of said at least one intermediate skid.

4,212,045

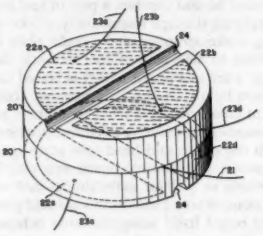
MULTI-TERMINAL VARISTOR CONFIGURATION

Francois D. Martzloff, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,448

Int. Cl.[2] H02H *1/04*

U.S. Cl. 361—127 **10 Claims**



1. A metal oxide varistor especially for polyphase circuit protection comprising a pair of metal oxide varistor bodies having substantially the same dimensions, each of said bodies having a pair of parallel opposed faces, a first one of said faces on each said varistor body possessing an electrode contact covering substantially all of said first face, and a second one of said faces on each said varistor body possessing two spaced-apart, noncontacting electrode contacts, each covering substantially half of said second face, said pair of varistor bodies being attached so that said first faces are coincident and said electrodes on said first faces are in electrical contact.

4,212,046

DISTANCE RELAYING SYSTEMS

Fumio Andow, Hachioji; Tetsuo Matsushima, Takaido-Higashi, and Eiichi Okamoto, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha and Tokyo Denryoki Kabushiki Kaisha, both of, Japan

Filed May 9, 1978, Ser. No. 904,264

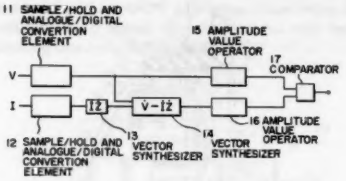
Claims priority, application Japan, May 16, 1977, 52-55418

Int. Cl.[2] H02H *3/38*

U.S. Cl. 361—80 **4 Claims**

1. A digital distance relaying system, comprising first means for determining an alternating current quantity $\dot{V}-\dot{I}\dot{Z}$, where $\dot{V}$ and $\dot{I}$ represent voltage and current of an alternating current system and $\dot{Z}$ a vector, second means for determining the amplitude value of the voltage $\dot{V}$, third means for determining

the amplitude value of said alternating current quantity V − IZ, and fourth means for comparing the outputs of said second and



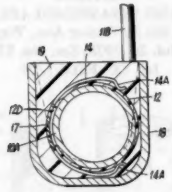
third means for determining the operating point of the relay system.

4,212,047

FAIL-SAFE/SURGE ARRESTER SYSTEMS

John Napiorkowski, Hempstead, N.Y., assignor to TII Corporation, Lindenhurst, N.Y.

Filed Aug. 31, 1976, Ser. No. 719,077
Int. Cl.² H02H *3/22*
U.S. Cl. 361—124 **22 Claims**



1. A fail-safe surge arrester system comprising:
(1) a gas filled housing including at least two electrodes defining an ionizable gap;
(2) short circuiting means biased toward a short circuit connection with said electrodes;
(3) fusible means in thermal contact with said gap and directly interposed between at least one of said electrodes and said short circuiting means, said fusible means comprising a plastic material having mechanical properties which change substantially under predetermined thermal conditions to prevent said short circuit connection at the fusible means except in the presence of a sustained overload causing said fusible means to fuse and yield to permit the establishment of said short circuit connection.

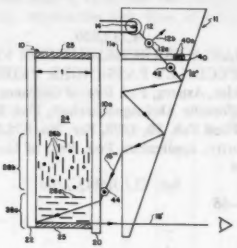
4,212,048

ILLUMINATOR FOR REFLECTIVE DICHROIC LIQUID CRYSTAL DISPLAYS

Donald E. Castleberry, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 16, 1978, Ser. No. 916,137
Int. Cl.² F21V *9/14*; G02F *1/13*; F21V *7/00*
U.S. Cl. 362—19 **3 Claims**

1. An illuminator for a reflective dichroic liquid crystal display cell having a planar front surface of predetermined length, said illuminator comprising:
a wedge of light transmissive material having a rear surface disposed adjacent and substantially parallel to, and of length greater than and overlying the length of, the planar front surface of said display cell;
means disposed within the thicker end of said wedge illuminator member for emitting light rays with random polarization and ramdom emission direction;
said randomly-emitted light rays emerging from said wedge illuminator member rear surface at random distances along the length thereof and obliquely entering the front surface of said display cell; and
means positioned within a portion of said thicker member end so as to avoid interference with light reflected from the said display cell front surface for polarizing the light



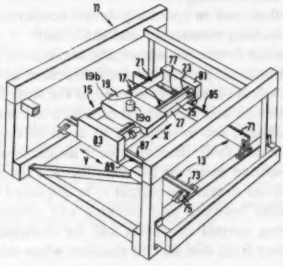
rays emitted from said wedge illuminator to have a polization vector parallel to the plane of said display front surface, to enhance the contrast ratio between light reflected from areas of said display cell respectivey substantially reflecting and substantially absorbing said rays.

4,212,049

GUIDEO CARRIAGE ASSEMBLY FOR PHOTODRAFTING EQUIPMENT

Geoffrey D. Maskens, Sturminster Marshall, England, assignor to Quest Automation Limited, Dorset, England

Filed Sep. 26, 1977, Ser. No. 836,826
Claims priority, application United Kingdom, Sep. 28, 1976, 40195/76
Int. Cl.² A61G *13/00*
U.S. Cl. 362—33 **8 Claims**



1. Photodrafting equipment comprising a guided carriage assembly having a carriage, photo-projection means on said carriage, and guide means for supporting the carriage for linear movement of the carriage and photo-projection means relative to said guide means, the guide means comprising first, second and third individual support members fixed to a base structure and presenting respective straight edges extending in one direction, and the carriage comprising bearing means for bearing on the said straight edges to support the carriage and to track therealong on movement the carriage in the said direction, the carriage being arranged for the bearing means to bear on the first straight edge at first and second spaced points with the lines of the reaction forces exerted thereat lying in a first plane parallel with the said direction, to bear on the second straight edge at third and fourth spaced points with the lines of the reaction forces exerted thereat lying in a second plane parallel with the said direction, the second plane being inclined to the first plane, and to bear on the third straight edge at a fifth point

with the line of the reaction force exerted thereat lying in a plane parallel with the said direction, the third plane being spaced from the line of intersection of the first and second planes.

4,212,050

SWINGABLE SEARCHLIGHT FOR VEHICLES, ESPECIALLY PASSENGER VEHICLES

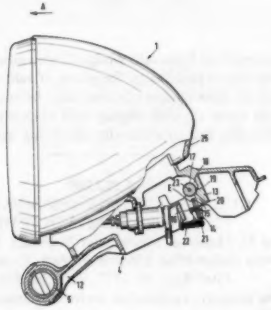
Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 10, 1978, Ser. No. 876,946

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1977, 2708374

Int. Cl.[2] B60Q *1/06*

U.S. Cl. 362—65 **14 Claims**



1. A retractable searchlight for vehicles which is movable from a working position to a retracted position comprising:

(a) at least one searchlight;

(b) a drive shaft and an operating device cooperating therewith for causing rotation of said shaft; and

(c) a supporting device for supporting said searchlight upon said shaft, said supporting device comprising at least two members a first of which is secured to the shaft for movement therewith and the second of which is connected to said searchlight and is mounted so as to be displaceable relative to said shaft, disengagement means between said first and second members for enabling said second member connected to said searchlight to be displaced with said first member between said working and retracted positions during normal operation and for disengaging said first member from said second member when said searchlight encounters a resistance, whereby continued movement of said searchlight is interrupted.

4,212,051

ANTI-ROTATIONAL LAMP ASSEMBLY

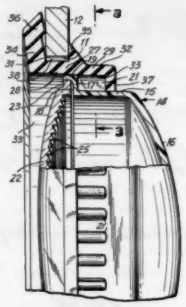
George J. Kulik, Valley Stream, N.Y., assignor to Abex Corporation, New York, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,930

Int. Cl.[2] F21V *21/14*

U.S. Cl. 362—287 **10 Claims**

1. An anti-rotational vehicle lamp assembly for mounting in an opening in a wall comprising a substantially cylindrical elastomeric grommet having a front end and a back end and an opening therethrough, said grommet formed with a substantially cylindrical side wall adapted to be secured within a substantially circular opening in said wall, and a lamp housing formed from substantially cylindrical side wall and a lens forming the front surface of said housing, said housing formed with a plurality of radial ribs about the circumference of said housing side wall for compressively engaging the inner surface of said grommet side wall, the outside diameter of said housing



along said ribs being greater than the inside diameter of said grommet side wall.

4,212,052

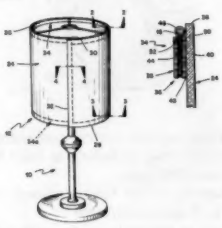
ASSEMBLABLE AND DISASSEMBLABLE LAMP SHADE

Carol K. Chambard, 301 N. Walker Ave., Wayzata, Minn. 55391

Filed Jul. 26, 1978, Ser. No. 928,319

Int. Cl.[2] F21V *1/06*

U.S. Cl. 362—352 **9 Claims**



1. An assemblable and disassemblable lamp shade comprising a sheet of flexible material having at least one edge, a first pile-type fastener tape having its back side secured to one side of said sheet adjacent said one edge thereof, a second pile-type fastener tape releasably engageable with said first pile-type fastener tape, and foldable means connected to and extending between adjacent edges of said pile-type fastener tapes, whereby said foldable means can be looped inwardly about a conventional lamp shade ring and said second pile-type fastener tape releasably engaged at said one side with said first pile-type fastener tape.

4,212,053

D.C. TO D.C. CONVERTER UTILIZING RESONANT INDUCTOR TO NEUTRALIZE CAPACITIVE LOSSES

James Sichenzia, Massapequa Park, N.Y., assignor to Venus Scientific Inc., Farmingdale, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,284

Int. Cl.[2] H02M *1/14*

U.S. Cl. 363—39 **9 Claims**

1. A d-c to d-c converter comprising:

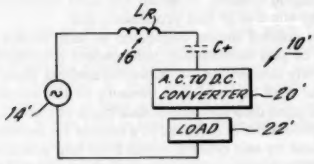
a d-c power source;

a step-up transformer having a primary winding, a secondary winding, and a core;

means for applying said d-c power source to said primary winding in such a manner that the polarity of a flux induced in said core by said d-c source reverses at a prede-

termined frequency equal to twice the operating frequency of the transformer;

a-c to d-c convertor means coupling said secondary winding to a load, said a-c to d-c convertor means being for converting an a-c signal appearing across said secondary winding into a d-c signal; and



said means for applying said d-c power source to said primary winding including an inductor which forms, at said operating frequency of said transformer, a resonant circuit solely with the equivalent Thevenin capacitive reactance appearing across said primary winding.

4,212,054

DC POWER SOURCE

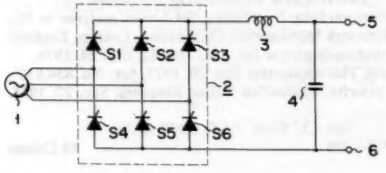
Nagataka Seki, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1978, Ser. No. 973,561

Claims priority, application Japan, Dec. 27, 1977, 52-156469; Mar. 30, 1978, 53-37072

Int. Cl.[2] H02M *1/18*

U.S. Cl. 363—53 **9 Claims**



1. A DC power source apparatus including a DC reactor, a parallel capacitor, a load circuit connected to the parallel capacitor, comprising:

a diode which is connected in a closed circuit formed by the parallel capacitor and the load circuit, with such a polarity as to block discharge current from the parallel capacitor; and

an auxiliary power source which is connected across the diode and feeds a forward current when the load circuit is in a normal condition and makes the DC output of the DC power source flow into the load circuit, and which further includes a voltage detector connected to the closed circuit formed by the parallel capacitor, the load circuit and the diode, thereby detecting an abnormal condition of the load circuit and shutting off the load current flowing in said diode on the basis of the detected output.

4,212,055

CONTROL FOR AN INVERTER STATION

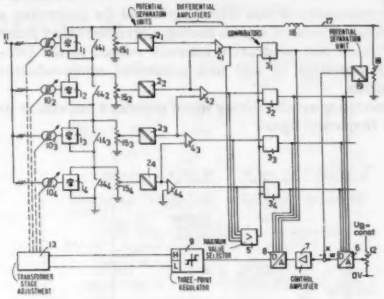
Johann Podlewski, Berlin, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,113

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736540

Int. Cl.[2] H02M *7/00*

U.S. Cl. 363—71 **2 Claims**



1. A method for matching the control arrangement for the direct voltage of an inverter station to the control path, in which the inverter station includes a plurality of thyristor bridges which are connected in series at their direct voltage side and connected to a three-phase mains via a plurality of variable ratio transformers each individually associated with a respective thyristor bridge, a plurality of extinction angle circuits each associated with a respective thyristor bridge, and a total control circuit for controlling the voltage of all thyristor bridges together, the control circuit providing an output corresponding to the direct voltage of the inverter station and responding to a setting value representative of the transformer stage adjustment which operates in synchronism for all thyristor bridges, said method comprising: comparing a measured value which corresponds to the direct bridge voltage of each thyristor bridge with the instantaneous maximum value of the measured values for all thyristor bridges; and, whenever a measured value differs from the maximum value by more than a predetermined amount, instantaneously switching off the respective thyristor bridge and correspondingly matching the control value for the transformer stage adjustment and the circuit gain of the total control circuit.

4,212,056

INVERTER APPARATUS

Hiroyuki Kitamura, Yokohama; Yorio Hosokawa, and Katsumi Fukasawa, both of Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 18, 1978, Ser. No. 943,458

Claims priority, application Japan, Sep. 20, 1977, 52-112795

Int. Cl.[2] H02P *13/20, 5/40*

U.S. Cl. 363—96 **12 Claims**

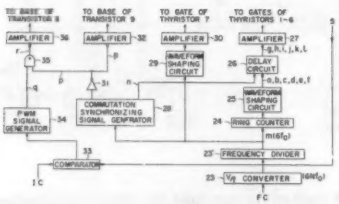
1. In an inverter apparatus of the type comprising a plurality of first controlled semiconductor elements connected between a direct current source and an alternating current load, a control circuit for sequentially turning ON and OFF said first controlled semiconductor elements according to a predetermined sequence to convert direct current into alternating current, and a reverse bias circuit including a pair of second controlled semiconductor elements respectively connected in series with said direct current source and ON.OFF controlled by said control circuit for applying a reverse bias to said first controlled semiconductor elements to effect simultaneous commutation thereof, and a pair of diodes connected across

said direct current source, and a third controlled semiconductor element connected between said first and second semiconductor elements and turned ON at the time of commutation of said first controlled semiconductor elements by said control circuit, and a reactor connected in parallel with said third controlled semiconductor element, said control circuit comprising:

means for forming a frequency signal having a frequency related to an operating frequency of said inverter apparatus,

means responsive to said frequency signal for generating a plurality of control signals having a predetermined phase difference and conduction intervals related to the ON.-OFF operation of said first controlled semiconductor elements,

a commutation synchronizing signal generator responsive to said frequency signal,



a delay circuit connected between said first controlled semiconductor elements and said control signal generating means for delaying said control signals in response to the output of said commutation synchronizing signal generator thereby turning ON and OFF said first controlled semiconductor elements in accordance with a predetermined sequence,

a pulse width modulation signal generator controlled by a predetermined instruction signal to produce a pulse width modulated signal,

means responsive to an inverted output of said commutation synchronizing signal generator and said pulse width modulated signal for controlling one of said second controlled semiconductor elements,

means responsive to the inverted output of said commutation synchronizing signal generator for controlling the other of said second controlled semiconductor elements, and

means responsive to said frequency signal for controlling said third controlled semiconductor element.

4,212,057

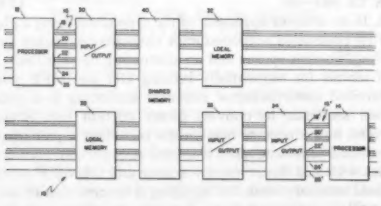
SHARED MEMORY MULTI-MICROPROCESSOR COMPUTER SYSTEM

Charles L. Devlin, Ballston Lake, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 22, 1976, Ser. No. 679,408

Int. Cl.[2] G06F *15/16, 13/00, 9/18*

U.S. Cl. 364—200 **9 Claims**



1. A microcomputer system of the type including at least two processors each configured to operate substantially independent of the remaining processors and each having an address bus, an input data bus and an output data bus, said system comprising:

a shared memory having an address bus, an input data bus and an output data bus for receiving on said input data bus into and, transmitting on said output data bus from, storage digital control, program and data information from and to any one of said processors; and

a single control means connected to said memory and to each of said substantially independent processors for selectively connecting the respective address, input data and output data buses of said memory to the respective address, input data and output data buses of a selected one of said processors in response to a request for memory access received by said control means from said processors, said control means including at least first, second and third sets of buffers respectively for connecting the address, input data and output data buses of said memory to the corresponding address, input data and output data buses of a selected processor sending a request for memory access; means for recognizing predetermined patterns of address bits appearing at said single control means on said address buses of said at least two processors for generating one of a plurality of logic signals each associated with a corresponding processor addressing said memory; and means receiving the logic signals from said address bits recognizing means for enabling said first, second and third sets of buffers to connect the buses of said memory to the associated busses of the requesting processor if a single memory access request is received by said control means and for enabling said first, second and third sets of buffers to connect the buses of said memory to the associated buses of the last processor previously having access to said memory, at any time prior to the present request for access and without consideration of the length of time any other processor has been waiting for access to said memory, if a request for memory access is received by said address bits recognizing means substantially simultaneously from each of at least two of said processors, after an access to said memory by one of said processors is completed.

4,212,058

COMPUTER STORE MECHANISM

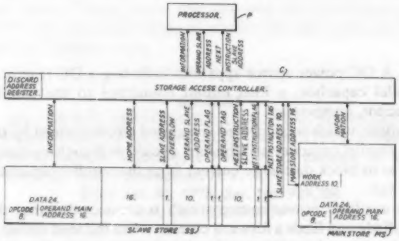
Jaya A. Gunawardena, Peradeniya, Sri Lanka, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 726,162, Sep. 24, 1976, abandoned. This application Sep. 20, 1977, Ser. No. 834,872

Claims priority, application United Kingdom, Sep. 27, 1975, 39647/75

Int. Cl.[2] G11C *9/00;* **G06F** *13/00*

U.S. Cl. 364—200 **13 Claims**



8. A method of accessing information in a computer system having two levels of memory, one level comprising a main store and the other level comprising a slave store of faster operating speed than said main store and having a lesser number of addresses than said main store, each word in said slave store including a main field of the same size as a word of main

store and a subsidiary field capable of containing at least one slave store address, there being provided (i) a storage access controller coupled to said main store and said slave store and including a discard address register for storing the address in said slave store into which the next transfer from said main store is to be inserted by said storage access controller, and (ii) validation means coupled to said slave store and said discard address register, the method comprising:

(a) transferring each of a plurality of words from a respective address in said main store to said main field of a respective address in said slave store determined by the discard address register under the control of said storage access controller, at least one of said words being an instruction and at least another of said words being data, previous words held in said slave store being discarded if necessary on a first-in-first-out basis;

(b) entering the slave store address of data required by said instruction into the subsidiary field of the slave store address of said instruction under the control of said storage access controller; and

(c),prior to execution of said instruction, comparing, in said validation means, the content of the subsidiary field of the slave store address of said instruction with the content of said discard address register to determine whether said data required by said instruction has been overwritten by another word from said main store since the slave store address of said data was written into the subsidiary field of the slave store address of said instruction.

4,212,059

INFORMATION PROCESSING SYSTEM

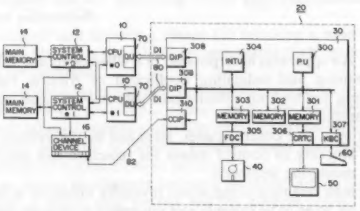
Fumitaka Sato, Oume; Masahiko Iwane, Tokyo, and Masaki Murayama, Fussa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Mar. 14, 1978, Ser. No. 886,598

Claims priority, application Japan, Mar. 14, 1977, 52-27788; Mar. 15, 1977, 52-28428; Mar. 15, 1977, 52-28429

Int. Cl.[2] G06F *11/00*

U.S. Cl. 364—200 **21 Claims**



1. An information processing system comprising:

external processor means capable of issuing diagnostic commands;

a central processing unit including a control store storing microprograms including a plurality of microinstructions, an interface connected to said external processor means, a microinstruction register for storing microinstructions received from said control store or from said external processor means through said interface, a circuit for processing microinstructions stored in said microinstruction register, and a diagnostic unit for processing a diagnostic command received from said external processor means through said interface; and

said diagnostic unit comprising means for writing a microinstruction received from said external processor means directly into said microinstruction register in response to said diagnostic command, means for causing said circuit to execute the microinstruction stored in said microinstruction register, and means for reading out the execution results generated by said circuit.

4,212,060

METHOD AND APPARATUS FOR CONTROLLING THE SEQUENCE OF INSTRUCTIONS IN STORED-PROGRAM COMPUTERS

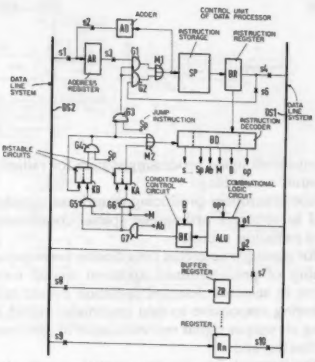
Gerhard Prey, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 681,057, Apr. 28, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 941,155

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1975, 2519395

Int. Cl.[2] G06F *9/00*

U.S. Cl. 364—200 **3 Claims**



1. In a program controlled data processing system, a control unit for controlling the instruction sequence in said data processing system, said control unit having an instruction storage unit for storing instructions, said control unit comprising:

instruction decoding means coupled to said instruction storage unit for decoding the instructions received from the instruction storage unit to generate control signals;

execution means coupled to said instruction decoding means for executing the instructions in accordance with the control signals;

checking means for determining the presence or absence of a prespecified condition in response to the decoding of an interrogation instruction by said instruction decoding means;

first and second bistable circuits;

first setting means responsive to the decoding of a control mark in the interrogation instruction by said instruction decoding means and the presence or absence of the prespecified condition for setting said first bistable circuit;

second setting means responsive to the decoding of the control mark in the interrogation instruction by said instruction decoding means and the presence or absence of the prespecified condition for setting said second bistable circuit;

first blocking means connected to said instruction decoding means and responsive to the setting of said first bistable circuit for preventing the execution of the next instruction in the instruction sequence by suppressing the control signals generated by said instruction decoding means; and

second blocking means connected to said instruction decoding means and responsive to the setting of said second bistable circuit together with the occurrence of a jump instruction signal Sp being read out of said instruction storage unit for preventing execution of the next following jump instruction in the instruction sequence by suppressing the control signals generated by said instruction decoding means for the next following jump instruction, said second blocking means including gate means connected to said instruction storage unit for preventing the instruction storage unit from receiving the branch address associated with the next jump instruction in response to the setting of

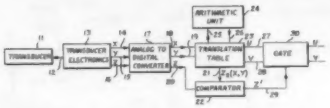
said second bistable circuit and the occurrence of a jump instruction signal Sp.

4,212,061

RADIATION SIGNAL PROCESSING SYSTEM

Glenn F. Knoll, Ann Arbor; Donald R. Strange, Howell, and Matthew C. Bennett, Jr., Ann Arbor, all of Mich., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 21, 1977, Ser. No. 862,889
Int. Cl.[2] G06F 7/38; G01T 1/20
U.S. Cl. 364—414 **18 Claims**



1. An improved signal processing system for radiation imaging apparatus, comprising:

a radiation transducer producing transducer signals proportional to apparent orthogonal spatial coordinates of detected radiation events;

means for storing true spatial coordinates corresponding to a plurality of predetermined apparent spatial coordinates relative to selected detected radiation events said means for storing responsive to said transducer signal and producing an output signal representative of said true spatial coordinates; and

means for interpolating the true spatial coordinates of the detected radiation events located intermediate the stored true spatial coordinates, said means for interpolating communicating with said means for storing

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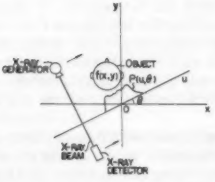
4,212,062

TOMOGRAPHIC IMAGING SYSTEM

Hideki Kohno, Tokyo; Hidemi Shiono, Akikawa; Chitose Nakaya, Hachioji; Kensuke Sekihara, Sakamachi; Teruichi Tomura, Kunitachi; Shinji Yamamoto; Takayuki Hayakawa, both of Hachioji; Isao Horiba, and Shigenobu Yanaka, both of Kashiwa, all of Japan, assignors to Hitachi Medical Corporation, Japan

Filed Jun. 27, 1978, Ser. No. 919,627
Claims priority, application Japan, Oct. 21, 1977, 52-126490
Int. Cl.[2] G01N 23/04; G06F 15/34
U.S. Cl. 364—414 **3 Claims**



1. A tomographic imaging system comprising:

irradiating means for irradiating a cross-section of an object under consideration with radiation rays from plural directions;

detector means for detecting the radiation rays transmitted through the cross-section of said object to produce an output signal;

first memory means for storing the output signal of said detector means; and

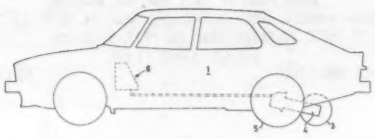
an image reconstructing section for performing a convolution integral operation on the contents of said first memory means by means of a first weighting function to reconstruct a three-dimensional image of the cross-section of said object, said image reconstructing section including (i) second memory means for storing a second weighting function, said second weighting function being provided with a predetermined positive and negative $(N-1)$th order when the output signal of said detector means produced by the irradiation of the cross-section of said object from one of said plural directions is sampled by N points, the value of the $(N-1)$th order of said second weighting function being an integration of said first weighting function from the $(N-1)$th order to positive infinity and the value of $-(N-1)$th order of said second weighting function being an integration of said first weighting function from the $-(N-1)$th order to negative infinity, (ii) control means for successively reading out the contents of said first and second memory means, and (iii) operational means for performing multiplying and summing operations on the read-out contents of said first and second memory means, said operational means producing the product of the values of the $(N-1)$th and $-(N-1)$th orders of said second weighting function and a component of the output signal of said detector means relating to the radiation rays free from the absorption thereof by said object.

4,212,063

APPARATUS FOR MEASURING THE ACTION OF FORCES BETWEEN WHEELED VEHICLES AND SUBSTRUCTURE

Ragnar M. Härdmark, Linköping, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Sep. 6, 1978, Ser. No. 940,038
Int. Cl.[2] G01N 19/02
U.S. Cl. 364—426 **9 Claims**



1. An apparatus incorporated in a wheeled motor vehicle for measuring and indicating coefficient of friction values for driving and braking vehicles on a substructure, said measuring apparatus comprising:

at least one control panel, arranged in the vehicle, with a plurality of control means for selection and control of a measuring sequence;

at least one measuring wheel pivotally mounted in the vehicle so as to be raisable and lowerable to engage and disengage said substructure, said wheel engaging the substructure at least during said measuring sequence, and said wheel rotating when engaged with said substructure with an amount of slip relative the speed of the wheeled vehicle;

at least one force measuring transducer mounted to said vehicle including means for sensing the forces and/or torque acting on the measuring wheel and generating signals corresponding thereto;

at least one vehicle speed measuring transducer mounted to the vehicle including means for sensing the speed of the vehicle and generating a pulsed signal corresponding thereto;

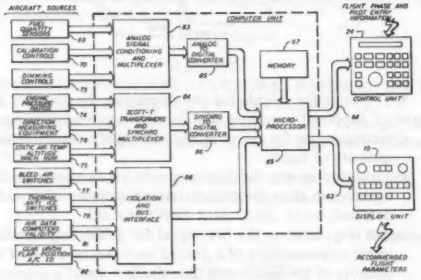
at least one electronic unit including a memory for storing a plurality of preset measuring distances, said unit being mounted to the vehicle, and further including means for receiving and processing signals generated by said force measuring transducers and said speed measuring transducers, and in response thereto transmitting output signals to a plurality of instruments displaying the measuring results; and

a plurality of controls mounted to said vehicle including means for selecting measuring distances of different length, each control triggering, when actuated, the switching in circuit of a first signal value preselected to represent the measuring distance in question in said memory, said electronic unit including means for comparing said first signal with a second signal value generated by summing up signal pulses generated by said vehicle speed transducer and representing the distance travelled by the vehicle during said measuring sequence, and wherein said electronic unit also includes means for triggering discontinuation of said measuring sequence when said first and second signal values are equal.

4,212,064
PERFORMANCE ADVISORY SYSTEM

Arthur M. Forsythe, Shelburne; James H. Anapol, and Zygmund Reich, both of Burlington, all of Vt., assignors to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Apr. 5, 1977, Ser. No. 784,819
Int. Cl.[2] G06F *15/00*
U.S. Cl. 364—424 **22 Claims**



1. A performance advisory system for use in optimizing aircraft performance comprising:

(a) a display unit for displaying to the pilot recommended flight parameters;

(b) a control unit including means for selecting a mode of aircraft operation for which recommended flight parameters are required;

(c) means for converting and multiplexing inputs from aircraft sources indicating actual operating parameters, which inputs comprise a plurality of inputs in analog form, another plurality in analog synchro form and further plurality in digital form comprising:

(i) an analog multiplexer having a plurality of data inputs and a single data output and an address input, said analog parameters being coupled to the data inputs of said analog multiplexer;

(ii) an analog to digital converter having its input coupled to the data output of said analog multiplexer;

(iii) a random access memory having a data input, a data output and an address input the data input of said random access memory coupled to the output of said digital to analog converter and the data output of said memory coupled to said computing means; and

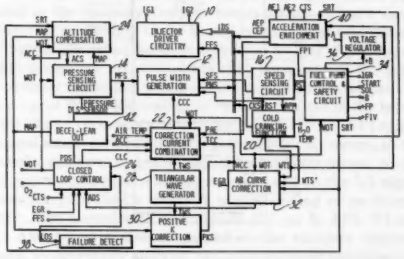
(iv) a cyclic address generator for cyclically addressing each of the inputs to said analog multiplexer having an output coupled to both said analog multiplexer address input and said random access memory address input, whereby the data present at the data inputs to said analog multiplexer will be successively loaded into locations of said random access memory; and

(d) computing means including at least a central processing unit and a fixed program memory having as inputs the outputs from said control unit indicating the mode of operation and said digital information, for solving the flight equations for the aircraft on which said system is installed, said computing means providing recommended flight parameters as outputs which are coupled to said display unit.

4,212,065
ALTITUDE COMPENSATION FEATURE FOR ELECTRONIC FUEL MANAGEMENT SYSTEMS

Roman O. Marchak, Northville; William A. Peterson, Jr., Rochester, both of Mich., and Ralph W. Carp, Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 917,992
Int. Cl.[2] F02M *7/00*; G06F *15/46*
U.S. Cl. 364—431 **10 Claims**



1. An electronic control unit for the management of the air/fuel ratio of an internal combustion engine, said electronic control unit comprising:

base calibration means for regulating the air/fuel ratio of the engine in response to sensed engine operating parameters indicative o the mass air flow and mass fuel flow inducted into the engine, said base calibration means regulating the air/fuel ratio by sensing one of said mass air flow and said mass fuel flow and calculating the other from a schedule of desired air/fuel ratios, said schedule including a manifold absolute pressure schedule with a power enrichment breakpoint beyond which the air/fuel ratio is decreased more rapidly for increases in manifold absolute pressure than below said breakpoint; and

altitude compensation means for correcting said air/fuel ratio for changes in air density occuring at different altitudes including,

power enrichment means for lowering the power enrichment breakpoint of the manifold absolute pressure schedule to lower manifold absolute pressure values for increases in altitude; and

altitude offset means for enrichment of the manifold absolute pressure schedule at all values for increases in altitude.

4,212,066
HYBRID ELECTRONIC CONTROL UNIT FOR FUEL MANAGEMENT SYSTEMS

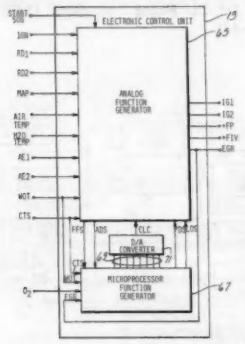
Ralph W. Carp; Harold E. Weissler, II, and Paul R. Kudlaty, all of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 918,306
Int. Cl.[2] F02M *7/00*; G06F *15/46*
U.S. Cl. 364—431 **14 Claims**

1. A hybrid electronic control unit for the management of the air/fuel ratio of an internal combustion engine, said electronic control unit comprising:

an analog function generator for receiving a plurality of inputs representative of various operating parameters and conditions of the engine and for outputting analog control

signals for controlling the air/fuel ratio of the engine, said analog function generator including a pulse which width generation means for generating a repetitive pulse width signal, wherein said signal is developed at a frequency dependent upon the speed of the engine and with duration indicative of air/fuel ratio, wherein said pulse width generation means regulates the duration of each pulse from the time elapsed by a variable ramp signal traversing from an initial level to a terminating level, and wherein said initial and terminating levels are a function of at least one operating parameter of the engine;



a digital function generator for receiving a plurality of inputs representative of various operating parameters and conditions of the engine and for outputting digital control signals to said analog function generator; and

a D/A converter for converting at least one of said digital control signals to an analog control signal,

said digital function generator communicating with said analog function generator via said converted control signal and uncconverted digital control signals, wherein said converted control signal varies said ramp signal to modulate the duration of the pulse width signal.

4,212,067

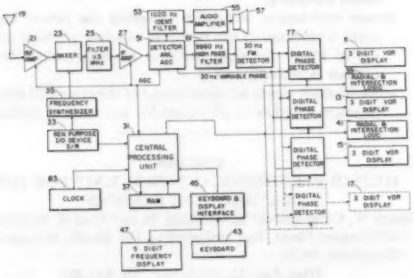
NAVIGATING DEVICE

Claude L. Henderson, Indianapolis, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed Jul. 20, 1978, Ser. No. 926,544

Int. Cl.[2] G01S *11/00*

U.S. Cl. 364—460 **31 Claims**



1. A radio navigation device comprising:

a plurality of display units for continuously providing simultaneous visible bearing indications relative to a plurality of geographically separated radio navigation facilities;

a single radio frequency receiver selectively operable at each of a plurality of different receiving frequencies corresponding to different radio navigation facilities; and

means for repetitively sequencing the receiver between different receiving frequencies at a rate sufficient to maintain a substantially continuously updated display for each bearing indication.

4,212,068

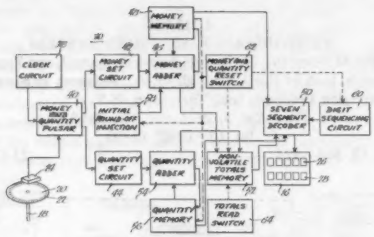
SYSTEM FOR CALCULATING AND DISPLAYING SALES INFORMATION

Clifton A. Hoyt, P.O. Box 1280 Star Rte., Solon Springs, Wis. 54873

Filed Jun. 3, 1977, Ser. No. 803,346

Int. Cl.[2] G06F *15/56*; B67D *5/08*

U.S. Cl. 364—465 **11 Claims**



1. A system for calculating and displaying the quantity and cost of dispensed quantities of a flowing liquid comprising:

detecting means for detecting the passing of a predetermined quantity of liquid;

means responsive to the detecting means for providing a first signal each time the predetermined quantity of liquid is detected;

means responsive to the first signal for generating a second signal representative of a desired incremental value of the quantity of the liquid each time the first signal is received;

means responsive to the first signal for generating a third signal representative of a desired cost of the liquid per incremental value of the quantity of the liquid;

means for storing the second and third signals;

means for adding the stored second and third signals with subsequently received second and third signals to provide updated second and third signals;

display means including a visual display section having a plurality of digits for displaying cost, and a visual display section having a plurality of digits for displaying quantity;

means for converting the updated second and third signals into a display of quantity and cost in said display means;

means for resetting the system after dispensing a desired quantity of liquid;

nonvolatile core memory means responsive to the resetting means for accumulating and storing the updated second and third signals each time the system is reset to provide a totals signal for the quantity and cost of all quantities of liquid dispensed; and

means for causing said totals signal to be displayed by said display means.

4,212,069

PARATRANSIT FARE COMPUTATION AND DISPATCHING METHOD

Dwight M. Baumann, 4516 Henry St., Pittsburgh, Pa. 15213

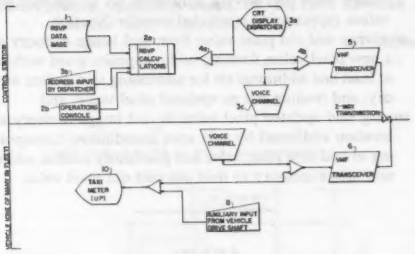
Continuation-in-part of Ser. No. 719,118, Aug. 31, 1976, abandoned. This application Jun. 6, 1978, Ser. No. 913,248

Int. Cl.[2] G06F *15/56*; G08G *1/12*

U.S. Cl. 364—467 **8 Claims**

1. A method of paratransit fare computation and dispatching, that comprises, storing at a station information in a computer relating to routes and distances between street addresses and historical data as to time for normal transit therebetween

under different times of day and traffic conditions; peripherally interfacing with the station through communication links with moving vehicles; communicating pick-up and deposit addresses along such links to the station from each vehicle for each hire thereof; calculating fares and estimating times of



transit using said stored information; transmitting along said links, said calculated fares and estimated times of transit selectively addressed to the corresponding vehicle; and receiving and automatically displaying said transmitted fares and times at the respective vehicles.

4,212,070

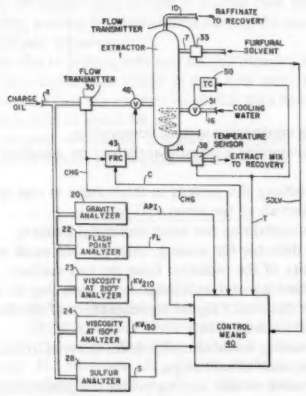
CONTROL SYSTEM FOR A FURFURAL REFINING UNIT RECEIVING HEAVY SWEET CHARGE OIL

Avi[illegible]no Sequeira, Jr.; John D. Begnaud, and Frank L. Barger, all of Port Arthur, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 851,912, Nov. 16, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,908

Int. Cl.[2] G06G *7/58;* C10G *21/00*

U.S. Cl. 364—500 **8 Claims**



1. A control system for a furfural refining unit receiving heavy sweet charge oil and furfural solvent, one of which is maintained at a fixed rate while the flow rate of the other is controlled by the control system, wherein the system treats the received heavy sweet charge oil with the received furfural to yield extract mix and raffinate, comprising gravity analyzer means for sampling the heavy sweet charge oil and providing a signal API corresponding to the API gravity of the heavy sweet charge oil, flash point analyzer means for sampling the heavy sweet charge oil and providing a signal FL corresponding to the flash point temperature of the heavy sweet charge oil, viscosity analyzer means for sampling the heavy sweet charge oil and providing signals KV_{150} and KV_{210} corresponding to the kinematic viscosities, corrected to 150° F. and 210° F., respectively, sulfur analyzer means for sampling the heavy sweet charge oil and providing a signal S corresponding to the sulfur content of the heavy sweet charge oil, flow rate sensing means for sensing the flow rates of the heavy sweet charge oil and of the furfural and providing signals CHG and SOLV, corresponding to the charge oil flow rate and the furfural flow rate, respectively, temperature sensing means sensing the temperature of the extract mix and providing a corresponding signal T, and control means connected to all of the analyzer means, and to all the sensing means for controlling the other flow rate of the heavy sweet charge oil and the furfural flow rates in accordance with signals API, FL, KV_{150}, KV_{210}, S, T, CHG and SOLV; wherein said control means includes VI signal means connected to the viscosity analyzer means for providing a signal VI corresponding to the viscosity index of the heavy sweet charge oil in accordance with the kinematic viscosity signals KV_{150} and KV_{210}; SUS_{210} signal means connected to the viscosity analyzer means for providing a signal SUS_{210} corresponding to the heavy sweet charge oil viscosity in Saybolt Universal Seconds corrected to 210° F.; W signal means connected to the viscosity analyzer means, to the gravity analyzer means and to the sulfur analyzer means for providing a signal W corresponding to the wax content of the heavy sweet charge oil in accordance with signals KV_{210}, API and S; A signal means connected to the gravity analyzer means, to the viscosity analyzer means, to the sulfur analyzer means, to the flash point temperature analyzer means and to the VI signal means for providing a signal A corresponding to an interim factor A in accordance with signals KV_{210}, S, API, VI and FL; ΔVI signal means connected to the viscosity analyzer means, to the gravity analyzer means, to the flash point temperature analyzer means, to the VI signal means, the W signal means and the SUS_{210} signal means and receiving a DC voltage VI_{RP} for providing a signal ΔVI corresponding to the change in viscosity index in accordance with signals KV_{210}, API, VI, FL, W and SUS_{210} and voltage VI_{RP}, J signal means receiving direct current voltages C_{80} through C_{83} and being connected to ΔVI signal means, to the A signal means, to the temperature sensing means for providing a J signal corresponding to a furfural dosage for heavy sweet charge oil in accordance with the ΔVI signal, signals A and T, voltages C_{80} through C_{83} and the following equation:

$$J=(\Delta VI-C_{80}-C_{81}\sqrt{T})/[-C_{82}T+C_{83}(A)(T)],$$

where C_{80} through C_{83} are constants; control signal means connected to the J signal means and to the flow rate sensing means for providing a control signal in accordance with the J signal and one of the sensed flow rate signals, and apparatus means connected to the control signal means for controlling the one flow rate of the heavy sweet charge oil and furfural flow rates in accordance with the control signal.

4,212,071

METHOD AND DEVICE FOR DRIVING A COMPACTION MACHINE

Pierre Dortu, Paris, France, assignor to Travaux et Produits Routiers Societe a Responsabilite Limitee, Paris, France

Filed Aug. 2, 1978, Ser. No. 930,211

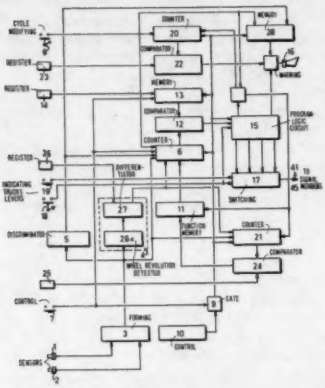
Claims priority, application France, Aug. 2, 1977, 77 23699

Int. Cl.[2] G06F *15/50*

U.S. Cl. 364—505 **12 Claims**

1. Method for driving a compaction machine over an area of ground, said method comprising: causing the machine to perform a certain number of passages to and fro in said area, preparing a program beforehand comprising the appropriate number of to and fro passages, as well as the length of each of them, recording said program, detecting the movements of the machine in one direction and in the other, comparing the movements of the machine with those provided by the program and transmitting signals, such as optical or sound signals, to inform the driver of the operation to follow, and when a length equal to the length provided in the program has been

traversed in one direction or in the other in the course of a round-trip, recording the length traversed by the machine beyond the length provided by the program until it is stopped



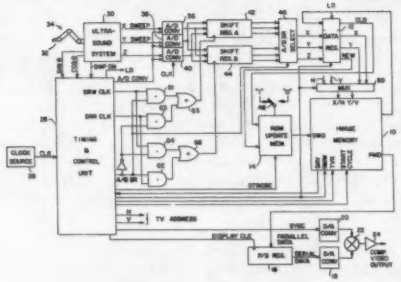
to change direction of operation, and therefrom increasing the path to be traversed in the opposite direction by a length equal to the thus recorded length.

4,212,072

DIGITAL SCAN CONVERTER WITH PROGRAMMABLE TRANSFER FUNCTION

Kenneth A. Huelsman, Carlsbad, and Allen A. Harano, Oceanside, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 7, 1978, Ser. No. 884,327
Int. Cl.[2] G06F *15/20*; H04N *5/14*
U.S. Cl. 364—515 **6 Claims**



1. A method for processing video data in digital form, and storing it in an image memory for subsequent display, where the video data is developed by repeated scans and presented in the form of scan signals defining scan coordinates of picture elements, and a pixel value for each picture element, the steps of

reading out of said image memory pixel values at locations corresponding to said scan coordinates,

providing an updated value for each new pixel value to be stored in said image memory from a set in an update memory as a function of (1) at least one old pixel value read out of said image memory at a location to be updated as defined by said scan coordinates, and (2) a new pixel value for the corresponding scan coordinates, said set having an appropriate updated value for every combination of an old pixel value and a new pixel value stored in an update memory location defined by a composite word including the combination of the old and new pixel values and at least one additional bit of greater significance,

selecting said at least one additional bit as a "1" or a "0" to provide for addressing one of said at least two parts of said update memory as a function of said old and new pixel values, each part having a different set of updated pixel values representing a selected transfer function,

receiving said old pixel value from said image memory and a new pixel value, forming said composite word with said at least one additional bit for addressing said update memory, and reading out an updated pixel value, and

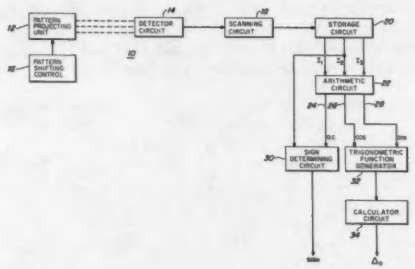
storing said updated pixel value in said image memory at a location addressed by said scan coordinates corresponding to said new pixel value and previously used to address said image memory to read out said old pixel value.

4,212,073

METHOD AND SYSTEM FOR SURFACE CONTOURING

N. Balasubramanian, 22908 Cricket Hill Rd., Cupertino, Calif. 95014

Filed Dec. 13, 1978, Ser. No. 969,241
Int. Cl.[2] G01B *11/24*
U.S. Cl. 364—562 **14 Claims**



1. A surface contouring system comprising:

means for projecting a sinusoidal pattern on a surface to be tested;

means for shifting the pattern in three steps at one quarter period intervals of the sinusoidal pattern;

mask means containing the same sinusoidal pattern;

at least one detector for sensing, through said mask means, the intensity of the radiation from the test surface;

means for scanning each said detector at each step to obtain from each detector a signal representative of the level of intensity at each detector;

means for storing each intensity level derived from each detector at each of said steps;

means responsive to said storing means for determining the d.c. spatial frequency amplitude from the sum of the intensity levels derived from the first and third steps; for determining the cosinusoidal spatial frequency amplitude from the difference between the intensity levels derived from the first and third steps and for determining the sinusoidal spatial frequency amplitude and intensity level derived from the second step;

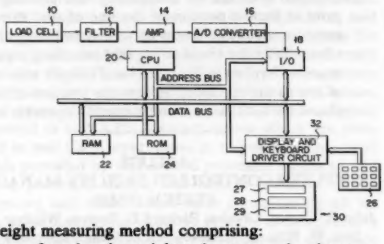
means for combining said sinusoidal and cosinusoidal spatial frequency amplitudes to generate an amplitude representative of a trigonometric function of the phase angle of the radiation from the test surface; and

means, responsive to said amplitude representative of a trigonometric function of the phase angle, for generating an output representative of the height of the test surface at each position monitored by a said detector.

4,212,074
WEIGHT MEASURING METHOD AND APPARATUS THEREOF

Shiro Kuno, and Yoshiharu Nishimura, both of Mishima, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1978, Ser. No. 927,938
Claims priority, application Japan, Jul. 29, 1977, 52-91966
Int. Cl.[2] G06F 9/16, 15/20; G01G 7/00
U.S. Cl. 364—567 21 Claims



1. A weight measuring method comprising:

a first step of sensing the weight to be measured and successively generating a digital data signal corresponding to the weight to be measured;

a second step of reading out the generated digital data signal at different timings and successively writing the same into a first memory;

a third step of comparing N (integer larger than 3) digital data corresponding to N digital data signals successively stored in said first memory;

a fourth step of, when it is detected (where M is an integer greater than 1 but less than N) that more than (M-1) number/of digital data in said N digital data have the same value, writing the digital data having the same value into a second memory;

a fifth step of writing into said second memory the latest one of the digital data stored in said first memory when it is detected that the number of digital data having the same value fails to reach M; and

a sixth step of reading out the digital data stored in said second memory as weight indication data.

4,212,075
ELECTRICAL COMPONENT TESTING SYSTEM FOR COMPONENT INSERTION MACHINE

Gerald W. Cleversey, Topsfield; Robert J. Duncan, Magnolia; George H. Medidge, Jr., North Andover, and Jean A. Fleming, South Hamilton, all of Mass., assignors to USM Corporation, Farmington, Conn.

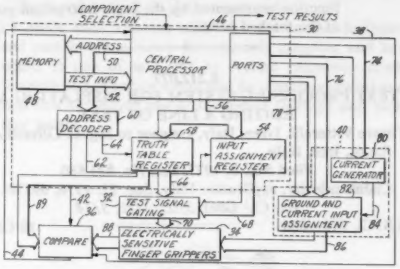
Filed Oct. 10, 1978, Ser. No. 950,056
Int. Cl.[2] G06F 11/00
U.S. Cl. 364—580 33 Claims

1. A system for testing components that are to be automatically inserted by a component insertion machine, said system comprising:

means, within the automatic control portion of said component insertion machine, for automatically identifying each component that is to be inserted by said component insertion machine;

means, responsive to the identification of a component that is to be inserted, for automatically selecting at least one test for each such identified component;

means, responsive to the automatic selection of a test, for applying at least one signal to an identified input on the component; and

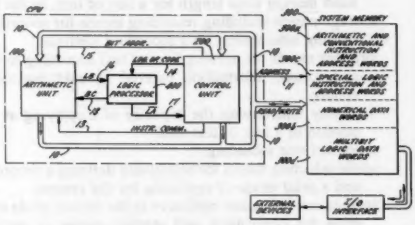


means for comparing the response of the component under test with an expected result.

4,212,076
DIGITAL COMPUTER STRUCTURE PROVIDING ARITHMETIC AND BOOLEAN LOGIC OPERATIONS, THE LATTER CONTROLLING THE FORMER

John P. Conners, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Sep. 24, 1976, Ser. No. 726,277
Int. Cl.[2] G06F 9/06
U.S. Cl. 364—706 35 Claims



1. In a digital computer, the combination comprising

(a) a basic arithmetic system including

(a1) a read/write system memory adapted to hold mutli-bit words at a plurality of address locations,

(i) some of said words representing coded instructions and addresses,

(ii) some of said words representing data, and

(iii) some of said instruction-address words being of special code format to represent a logic instruction, a bit address, and a memory address,

(a2) an arithmetic unit having multi-bit inputs and outputs,

(a3) a bus between said system memory and said arithmetic unit, and

(a4) a control unit including means for producing successive operational sequences which include

(i) fetching an instruction/address word from memory,

(ii) feeding from memory to the arithmetic unit the operand represented by the address portion of the fetched word, and

(iii) executing the function represented by the instruction portion of the fetched word,

(b) a one-bit logic processor responsive to various logic operation codes to perform different functional operations upon a bistate input signal (LB) fed thereto,

(c) said control unit (a4) further including means responsive to a special instruction word fetched from memory for

(i) transmitting from the operand fed to said arithmetic

unit, as an input signal to said logic processor, the particular bit which corresponds to the bit address portion of the fetched word, and

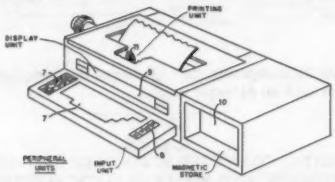
(ii) actuating said logic processor (b) to execute the function represented by the logic instruction portion of the fetched word.

4,212,077

TEXT PROCESSING SYSTEM FOR DISPLAYING AND EDITING A LINE OF TEXT

Vittore Vittorelli, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Irea, Italy

Filed Sep. 8, 1977, Ser. No. 831,530
Claims priority, application Italy, Sep. 22, 1976, 69270 A/76
Int. Cl.[2] G06F *3/02, 3/10, 3/14*
U.S. Cl. 364—900 **18 Claims**



1. A text processing system comprising:

manual input means responsive to an operator for entering text information, including alphanumeric characters such as space and hyphen characters, and format information, including printing line length, right hand margin and right hand margin zone length for a line of text, in the system;

storage means including recording means for recording and reading information on a recording medium;

printing means for printing lines of text according to the text and format information entered by said manual input means;

a display unit having the capacity of displaying at least a portion of a line of text; and

a control unit including:

mode selecting means for selectively defining a record mode and a print mode of operation for the system;

storage control means operative in the record mode of operation for controlling said storage means to record the information entered by said manual input means on said recording medium of said recording means, on a line by line basis;

temporary storage means operative in the print mode of operation upon entry of the format information for temporarily storing a line of text;

read out means connected to said storage means and said temporary storage means for reading out text information from said recording medium and transferring the text information to said temporary storage means;

searching means, operative in the print mode of operation when the length of the line of text temporarily stored in said temporary storage means is greater than the printing line length entered by said manual input means, for searching for a space or hyphen character stored in the right hand margin zone of the line of text stored in said temporary storage means;

insertion means operative in the event said searching means does not find a space or hyphen character in the right hand margin zone of the line of text for automatically inserting a hyphen character in a predetermined position in the right hand margin zone of the line of text stored in said temporary storage means;

display control means for controlling said display unit to display at least the alphanumeric characters stored in said temporary storage means in the right hand margin zone of the line of text;

first manually operable means responsive to the operator and connected to said temporary storage means for altering the position in said temporary storage means of the inserted hyphen character within the right hand margin zone of the line of text;

actuating means responsive to each operation of said first manually operable means for actuating said display control means to control said display unit to thereby display the right hand margin zone of the line of text stored in said temporary storage means;

second manually operable means for enabling the operator to confirm the acceptance of the displayed position of the hyphen character; and

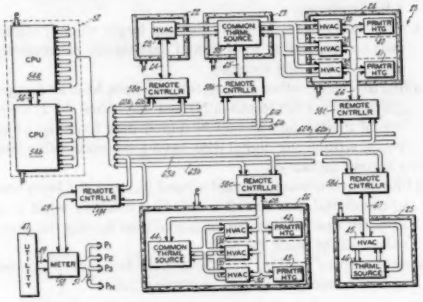
print control means for controlling said printing means to print at least a portion of the line of text stored in said temporary storage means up to and including the hyphen character in the event either said searching means finds a space or hyphen in the right hand margin zone of the line of text or the operator confirms the position of the hyphen character with said second manually operable means.

4,212,078

COMPUTER CONTROLLED FACILITY MANAGEMENT SYSTEM (FMS)

John E. Games, Granby; Richard E. Rosien, Windsor, and William W. Bitterli, Simsbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,557
Int. Cl.[2] G06F *3/04, 15/46;* **H04Q** *9/00*
U.S. Cl. 364—900 **4 Claims**



1. Apparatus for controlling the operation of an environmental conditioning system (ECS) of the type which regulates environmental conditions of a space in dependence on the actual value of output parameters provided by one or more controlled devices therein in response to corresponding parameter control signals presented to each, comprising:

plurality of sensor means disposed in the ECS, one or more associated with each controlled device for providing sensed actual value output parameter signals from the associated controlled device;

plurality of control interface means, one associated with each controlled device, each adapted for providing in response to closed loop signals presented thereto the corresponding parameter control signal to the associated controlled device;

remote processor unit (RPU) means, having RPU input means and RPU output means and having RPU memory means for storing signals, said remote processor unit means being responsive at said RPU input means to said sensed actual value parameter signals presented thereto from said plurality of sensor means and to controlled device reference parameter signals for each controlled device presented thereto from a central processor unit means, said RPU input means having means for successively sampling, and registering in said RPU memory means, successively sampled values of said sensed actual

value parameter signals and said controlled device reference parameter signals presented thereto, said RPU output means being connected to each of said control interface means, said remote processor unit means comparing said sensed actual value parameter signals registered therein for each controlled device with the controlled device reference parameter signal registered therein for the same controlled device for providing through said RPU output means to the associated one of said control interface means said closed loop signal at a magnitude in dependence on a difference value therebetween; and

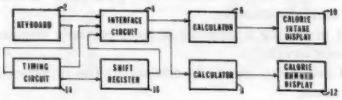
central processor unit (CPU) means, having CPU input means connected for response to said RPU output means and CPU output means connected for response to said RPU input means, and having CPU memory means for storing signals including a plurality of ECS reference signals for the ECS, said CPU input means having means for sampling, and registering in said CPU memory means, signals presented thereto including said sensed data signals registered in said RPU memory means which are presented to said CPU input means in response to command signals provided by said central processor means to said remote processor means, said central processor means comparing said sensed actual value parameter signals for each controlled device with one or more of said plurality of ECS reference signals for providing said controlled device reference parameter signals to said remote processor means at a magnitude equal to a difference value therebetween.

4,212,079

ELECTRONIC CALORIE COUNTER

Richard B. Segar, Largo, Md., and Lewis C. Marascalco, Pittsburgh, Pa., assignors to GPD, Inc., Mitchellville, Md.

Filed May 18, 1978, Ser. No. 907,338
Int. Cl.[2] G06M *3/08*
U.S. Cl. 364—900 **10 Claims**



1. A calorie monitoring device comprising:

(a) first input means for receiving an input indicative of calorie intake said first input means including a keyboard;

(b) interface means;

(c) first calculator means coupled to said first input means by said interface means, said first calculator means comprising:

(i) first display means for displaying the calorie intake;

(ii) first storage means for storing the value of calorie intake;

(iii) first adder means for adding the input of said input means to the value in said first storage means, wherein the sum replaces the value in said storage means and is displayed on said display means;

(d) second input means for receiving an input indicative of calories burned per unit of time said second input means including said keyboard;

(e) timing circuit means coupled between said second input means and said interface means;

(f) second calculator means coupled to said second input means and said timing circuit means by said interface means, said second calculator means comprising:

(i) second display means for displaying the value of calories burned;

(ii) second storage means for storing the input to said second input means and the total value of calories burned; and

(iii) adder means for adding the value of the input of said second input means to the total value of the calories burned at predetermined intervals as determined by said timing circuit means, wherein the sum replaces the total value of the calories burned in said storage means and is displayed on said display means; and

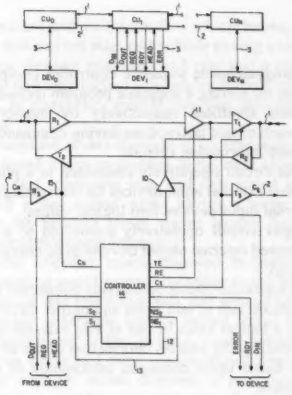
(g) a mode switch means coupled between said keyboard and said interface means for operably coupling said keyboard to one of said first or second calculator means through said interface means and for disabling the other of said first or second calculator means through said interface means.

4,212,080

DATA TRANSMISSION CONTROL SYSTEM

Walter C. Milliken, 8 Evans Dr., Dover, N.H. 03820

Filed Jun. 5, 1978, Ser. No. 912,871
Int. Cl.[2] G06F *3/04*; H04Q *9/00*
U.S. Cl. 364—900 **10 Claims**



1. A data communication system comprising:

a plurality of control units each one of which includes means for transmitting and receiving data;

a communication bus, having a head end and a tail end, interconnecting said control units in series and including a bidirectional data signal path and a single unidirectional control signal path;

a plurality of devices each one of which is adapted for either or both transmitting or receiving data;

an interface signal bus corresponding to each one of said devices operatively connecting each corresponding device to a corresponding one of said control units;

wherein at least one of said control units includes means for activating a control signal and unidirectionally propagating said control signal toward the tail end of said communications bus via said control signal path; and wherein

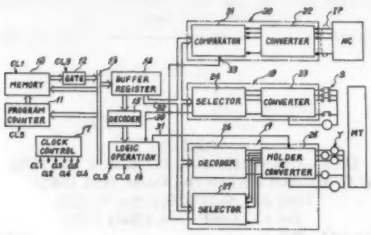
each of said control units includes selectable means for unidirectionally propagating said control signal toward the tail end of said communications bus via said control signal path, and means responsive to the active state of said control signal and independent of any other signal on said communications bus for enabling its corresponding device to transmit data.

4,212,081

PROGRAMMABLE SEQUENCE CONTROLLER WITH AUXILIARY FUNCTION DECODING CIRCUIT

Isao Suzuki, Okazaki; Toshihiko Yomogida, Kariya, and Sadamu Kato, Takahama, all of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha, Aichi, Japan

Filed Jul. 10, 1978, Ser. No. 923,205
Claims priority, application Japan, Jul. 29, 1977, 52-91584
Int. Cl.[2] G05B 19/28; G06F 3/00
U.S. Cl. 364—900 6 Claims



1. A programmable sequence controller comprising: memory means for storing a sequence program including a train of instructions identified respectively by memory addresses thereof, each of said instructions having command information and address information therein;

an input circuit operatively connected to a plurality of addressed external input devices for converting states of said external input devices into logical values;

an output circuit operatively connected to a plurality of addressed external output devices to be energized or deenergized;

a logic operation circuit operatively connected to said memory means and to said input and output circuits for examining a logical value of one of said external input devices specified by the address information of one of said instructions based upon command information of said one instruction;

means for reading out the sequence program from said memory means and feeding command information to said logic operation circuit and address information to said input and output circuits, said output circuit being operable to energize or deenergize one of said addressed external output devices in response to an output of said logic operation circuit;

means for timing the operations of said memory means, logic operation circuit and reading out means;

said memory means further storing an auxiliary function decoding program comprising command information and address information;

a comparator circuit capable of a simultaneous comparison of a plurality of bits and operatively connected to an external numerical control device to receive auxiliary function data therefrom and connected to receive address information of said decoding program for comparing the auxiliary function data with the address information of said decoding program;

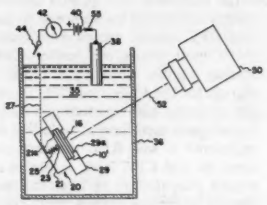
said logic operation circuit being further operatively connected to said comparator circuit to examine the comparison result of said comparator circuit based upon command information of said decoding program, whereby the auxiliary function data is decoded.

4,212,082

METHOD FOR FABRICATION OF IMPROVED STORAGE TARGET AND TARGET PRODUCED THEREBY

William D. Barber, Ballston Lake, and George E. Possin, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 21, 1978, Ser. No. 898,620
Int. Cl.[2] G11C 13/02; C25D 11/32
U.S. Cl. 365—118 15 Claims



1. A method for fabricating a charge-storage target, comprising the steps of:

(a) providing a target of silicon semiconductor material of a first polarity-type;

(b) fabricating a semiconductor layer of silicon of an opposite polarity-type, upon a surface of the semiconductor substrate;

(c) providing an electrolyte initially in contact with a portion of the surface of said semiconductor layer, opposite said substrate, upon which an anodic oxide layer is to be grown and thence in contact with the surface of said anodic oxide during growth;

(d) selecting the electrolyte to be one of diethylene glycol, HNO_3, and a mixture of potassium nitrate and N-methylacetamide;

(e) providing a cathode at least partially immersed in the electrolyte;

(f) providing an anode contact to the semiconductor substrate;

(g) utilizing a final anodizing potential of at least 200 volts to cause a flow of current from the anode connection through the electrolyte to the cathode to anodize the surface of the semiconductor layer, opposite the junction between the semiconductor layer and substrate and form a layer of anodic silicon oxide thereon; and

(h) fabricating a layer of conductive material upon the surface of the anodic silicon oxide.

4,212,083

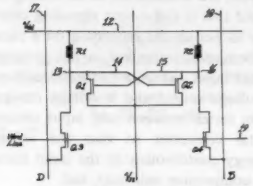
MOS INTEGRATED WITH IMPLANTED RESISTOR ELEMENTS

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 691,252, May 28, 1976. This application Aug. 18, 1978, Ser. No. 934,931
Int. Cl.[2] G11C 11/40
U.S. Cl. 365—154 6 Claims

3. An integrated semiconductor device including a buried resistor comprising: an active circuit element formed in a face of a semiconductor body and including regions of doped semiconductor material in said face; a layer of thick, thermally grown field oxide surrounding said regions on said face, said layer extending into the face having a thickness not substantially less than the depth of said regions; and a resistor element comprising lightly-doped semiconductor material of conduc-

tivity-type opposite that of material immediately thereunder, said layer of field oxide overlying said resistor element; one



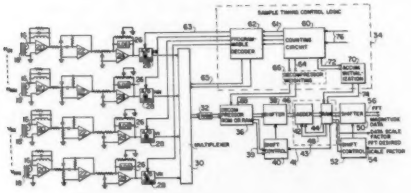
end of the resistor element being connected to one of said regions.

4,212,084

BEAM-FORMER FOR FFT-BASED SIGNAL PROCESSOR

Lynn A. Poole, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 20, 1978, Ser. No. 962,538
Int. Cl.[2] G01S *3/80*
U.S. Cl. 367—118 24 Claims



10. A beam-forming signal processor for use with a Fast Fourier Transform circuit in a sonar system comprising:

an array of pressure sensors forming a series of rows and columns;

a plurality of compression means;

a plurality of coupling means including a coupler for each row and for each column in said array of pressure sensors for coupling the analytical sum of the outputs from the sensors in that row of column to a different one of said plurality of compression means, said couplers at least partially weighting said signals with respect to each other to form a desired beam shape;

means for sampling and digitizing different ones of said compressed signals at predetermined times in relation to each other to thereby impart an appropriate time shift to the compressed signals in relation to each other so that the direction of maximum sensitivity of the beam to be formed by processing these signals is tilted, said sampling and digitizing means including an analog-to-digital converter for each one of said compression means;

means for decompressing said time shifted signals;

means for accumulating the decompressed signals originating from a plurality of said couplings means; and

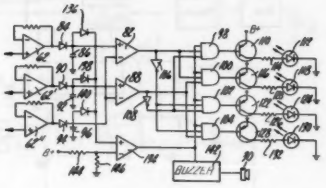
means for applying the signal from said accumulating means representing one sample of a tilted sensitivity pattern to said Fast Fourier Transform circuit.

4,212,085

FREQUENCY ACTIVATED DIRECTION INDICATOR

Mary C. Vaillancour, 99 Cherry Hill Dr., Davison, Mich. 48423, and Bruce L. Miller, Davison, Mich., assignors to Mary C. Vaillancour, Flint, Mich.

Filed Dec. 8, 1976, Ser. No. 748,642
Int. Cl.[2] G01S *3/80*
U.S. Cl. 367—124 8 Claims



6. In combination with an automotive vehicle having a front, a rear, a right side and left side, said vehicle having a longitudinal axis passing through said front and rear and a transverse axis, normal to said longitudinal axis passing through said right and left sides, an emergency vehicle direction indicator, comprising at least

first sound amplifier means disposed to preferentially receive incident sound waves originating to the right of said vehicle along said transverse axis, said first sound amplifier generating a first output signal having a value proportional to the incident sound waves having frequencies above a predetermined frequency;

second sound amplifier means disposed to preferentially receive incident sound waves originating to the left of said vehicle along said transverse axis, said second sound amplifier means generating second output signal having a value proportional to the incident sound waves having frequencies above said same predetermined frequency;

third sound amplifier means disposed to preferentially receive incident sound waves originating from a direction along said longitudinal axis, said third sound amplifier means generating a third output signal having a value proportional to the incident sound waves having frequencies above said same predetermined frequency; and

first comparator means receiving said first and third output signals for generating a first compared signal indicative of the value of said first output signal being greater than said third output signal and a second compared signal indicative of the value of said third output signal having a value greater than said first output signal;

second comparator means receiving said second and third output signals for generating a third compared signal when the value of said second output signal is greater than the value of said third output signal and a fourth compared signal when the value of said third output signal is greater than the value of said second output signal;

logic means having four outputs, each of said outputs indicative a predetermined direction, said logic means generating a signal on one of said outputs in response to said first, second, third and fourth compared signals;

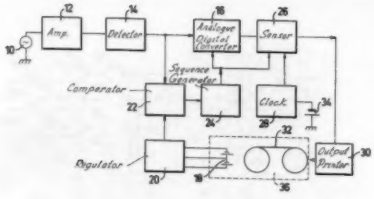
visual indicator means connected to each of the four outputs of said logic means for generating a visual signal indicative of the direction from which said sound waves are originating in response to the signal generated by said logic means.

4,212,086

MEASURING AND RECORDING DEVICE FOR MONITORING VIBRATIONS CAUSED BY BLASTING

Lars Stenling, Märsta, Sweden, assignor to Nitro Consult AB, Sweden

Filed Jan. 30, 1978, Ser. No. 873,261
Claims priority, application Sweden, Feb. 3, 1977, 7701217
Int. Cl.[2] G01V 1/16; G01D 9/28
U.S. Cl. 367—178 8 Claims



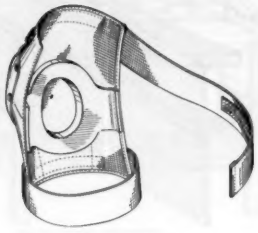
1. In a measuring and recording device having at least one transducer in an input circuit and set to detect vibrations, whereby mechanical movement detected by said transducer is converted into electric signals, which, after further processing in the input circuit, are transmitted to an analog/digital converter so designed that it and a time signaling circuit may be read by a sensor to permit the recording on a recording medium of the information embodied in the processed signals received from said input circuit, a further circuit comprising

a regulated voltage source and a voltage comparator unit connected in series between said input circuit and said analog/digital converter so that the voltage source supplies energy continuously to the input circuit, and to the voltage comparator unit only, and

a sequence generator having an input connected to the output of said comparator unit, and an output connected to said converter and to said sensor,

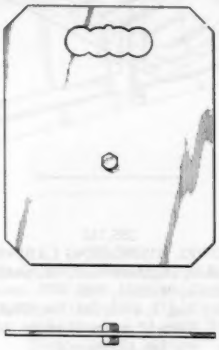
said comparator unit being connected to said output circuit and being operative, upon receiving from said input circuit a processed signal of a magnitude exceeding a pre-set threshold value, to trigger the regulated voltage source so that the latter intermittently powers said sequence generator, which functions to activate and control both said analog/digital converter and said sensor.

255,728
PROTECTOR
John D. Baron, 2040 Ocean Front, Del Mar, Calif. 92014
Filed May 12, 1978, Ser. No. 905,187
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27

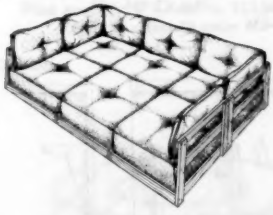


255,729
BOLA TIE
Glenda Harriman, 520 N. 72nd Pl., Scottsdale, Ariz. 85257
Filed Oct. 5, 1977, Ser. No. 839,643
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—352

255,730
SAW BLADE CARRIER
Frederick L. McLean, 670 Van Buren Ave., St. Paul, Minn. 55104
Filed Feb. 24, 1978, Ser. No. 881,077
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30



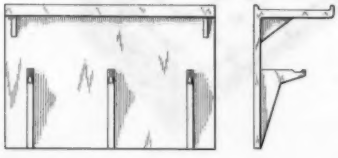
255,731
LOUNGE SEAT OR SIMILAR ARTICLE
Robert J. Marks, 9350 SW. 106th St., Miami, Fla. 33157
Filed Aug. 12, 1977, Ser. No. 823,966
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



255,732
SOAP DISH
Harry Thomasson, Paarp, Sweden, assignor to Osmos Plast AB, Helsingborg, Sweden
Filed Nov. 3, 1978, Ser. No. 959,111
Claims priority, application Sweden, Aug. 15, 1978, 781872
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—90

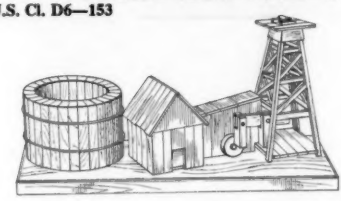
255,733
TOWEL DISPENSING CABINET
E. Burton Benjamin, Highland Park, Ill., assignor to Mosinee Paper Corporation, Mosinee, Wis.
Filed Aug. 2, 1978, Ser. No. 930,336
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—96

255,734
COMBINATION SHELF AND HOOK UNIT
Arno J. Liebman, 1819 Shore Dr., South, Apt. No. 218, South Pasadena, Fla. 33707
Filed Jul. 26, 1978, Ser. No. 928,440
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—136

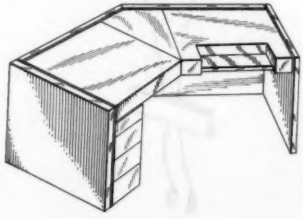


255,735
BAR
Allen W. Gale, Rocky River, Ohio, assignor to Cardinal American Corporation, Cleveland, Ohio
Filed Nov. 14, 1977, Ser. No. 851,525
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—144

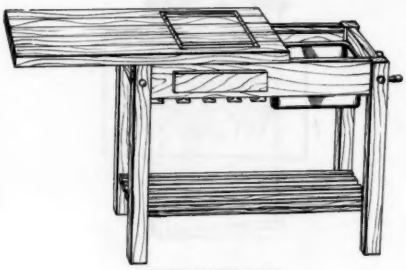
255,736
PLANTER
Winnie C. Whitmire, P.O. Box 3843, Odessa, Tex. 79760
Filed Oct. 25, 1978, Ser. No. 954,598
Term of patent 14 years
Int. Cl. D6—*06;* D11—*02;* D21—*01*
U.S. Cl. D6—153



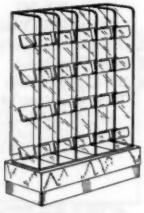
255,737
STATION
Frank Gayeski, 45 Pine St., Hackensack, N.J. 07601
Filed Apr. 19, 1978, Ser. No. 897,922
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



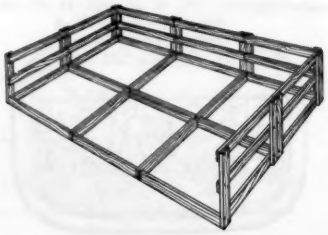
255,738
SERVING TABLE
Philip L. Tome, Malta, Ohio, assignor to Taylor Woodcraft, Malta, Ohio
Filed Mar. 30, 1978, Ser. No. 891,941
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



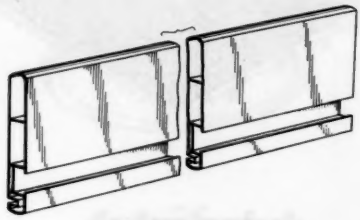
255,739
PANTY HOSE DISPLAY UNIT
Russell K. Winter, Crownsville; Nedim Savas, Bethesda; Joseph H. Snively, Catonsville, and Thomas D. Harvey, Chevy Chase, all of Md., assignors to Russell William, Ltd., Columbia, Md.
Filed Apr. 23, 1979, Ser. No. 32,173
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—189



255,740
FURNITURE FRAME OR SIMILAR ARTICLE
Robert J. Marks, 9350 SW. 106th St., Miami, Fla. 33157
Filed Aug. 12, 1977, Ser. No. 823,965
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

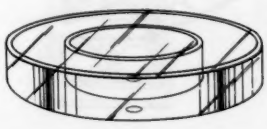


255,741
DRAWER WALL PANEL
Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L. B. (Plastics) Limited, Belper, England
Filed Jan. 27, 1978, Ser. No. 872,955
Claims priority, application United Kingdom, Jul. 23, 1977, 980868
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

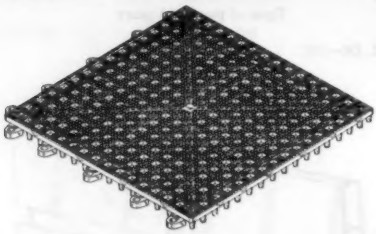


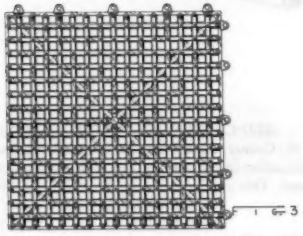
255,742
BED CANOPY FRAME SIDE RAIL
Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035
Continuation-in-part of Ser. No. 675,499, Apr. 9, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,638
Term of patent 14 years
Int. Cl. D6—*06, 01*
U.S. Cl. D6—198

255,743
CUSHION
Patrick J. Randall, 2320 Jackson, Joplin, Mo. 64801
Filed Aug. 12, 1977, Ser. No. 823,940
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—201



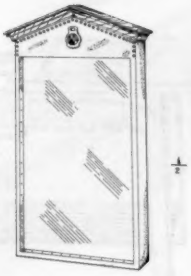
255,744
MAT SECTION
Chester E. Dekko, Baby Mountain, Kendallville, Ind. 46755
Filed Jan. 9, 1978, Ser. No. 867,954
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209





255,745
MIRROR
Erling H. Pedersen, Lyngby, Denmark, assignor to Stig Ravn A/S, Farum, Denmark
Filed Aug. 7, 1978, Ser. No. 931,817
Claims priority, application Denmark, Feb. 9, 1978, 118/78
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—236

255,746
MIRROR FRAME OR THE LIKE
John Van Koert, New York County, N.Y.
Filed Sep. 23, 1977, Ser. No. 836,194
Term of patent 14 years
Int. Cl. D6—*7*
U.S. Cl. D6—241



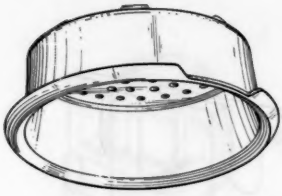
255,747
COOKING VESSEL
Joseph A. Rinaldi, Oradell, N.J., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed Jul. 17, 1978, Ser. No. 925,420
Term of patent 14 years
Int. Cl. D07—*01, 02*
U.S. Cl. D7—16

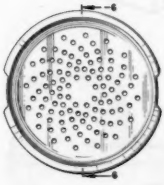
255,748
DECAL FOR CULINARY WARE OR THE LIKE
Patricia A. Luzier, Toledo, Ohio, assignor to Corning Glass Works, Corning, N.Y.
Division of Ser. No. 797,471, May 16, 1977. This application Mar. 22, 1979, Ser. No. 22,812
Term of patent 14 years
Int. Cl. D07—*01;* D19—*08*
U.S. Cl. D7—39

255,749
DECAL FOR CULINARY WARE OR THE LIKE
Patricia A. Luzier, Toledo, Ohio, assignor to Corning Glass Works, Corning, N.Y.
Division of Ser. No. 797,471, May 16, 1977. This application Mar. 22, 1979, Ser. No. 22,814
Term of patent 14 years
Int. Cl. D07—*01;* D19—*08*
U.S. Cl. D7—39

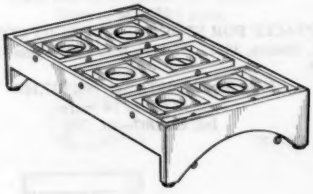
255,750
DECAL FOR CULINARY WARE OR THE LIKE
Estelle G. Rothstein, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Division of Ser. No. 817,854, Jul. 21, 1977. This application Apr. 4, 1979, Ser. No. 26,939
Term of patent 14 years
Int. Cl. D07—*01;* D19—*08*
U.S. Cl. D7—39

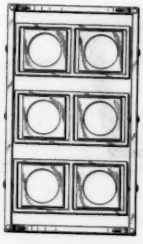
255,751
COLANDER
Robert H. C. M. Daenen, Hekelgem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Feb. 9, 1978, Ser. No. 876,460
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—47





255,752
BEVERAGE TRAY
Yngve Källström, Jönköping, Sweden, assignor to Lennart Almquist, Mullsjo and Goran Kjellerstedt, Huskvarna, both of, Sweden
Filed Aug. 17, 1977, Ser. No. 825,546
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—71



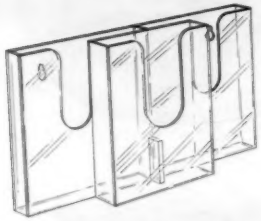


255,753

FOOD PROCESSOR TOOL HOLDER

Paul R. Hoffman, Toronto, and Hans K. Wallenwein, Thornhill, both of Canada, assignors to Plasti-Fab. Co. Ltd.

Filed Feb. 15, 1978, Ser. No. 878,178
Term of patent 14 years
Int. Cl. D7—*06;* D6—*04*
U.S. Cl. D7—74

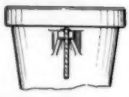


255,754

RECEPTACLE FOR STORING A YOGURT CONTAINER

Carol A. Faunce, 30117 Wicklow Rd., Farmington Hills, Mich. 48018

Filed Sep. 28, 1977, Ser. No. 837,159
Term of patent 14 years
Int. Cl. D07—*01, 07*
U.S. Cl. D7—77

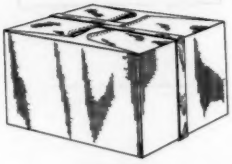


255,755

INSULATED CARRIER FOR BEVERAGE CANS OR THE LIKE

David L. Galloway, Christian County; Morris L. Dock; James K. Grundy, both of Green County, and Robert D. Woodworth, Stone County, all of Mo., assignors to Leisure Foam Products, Inc., Ozark, Mo.

Filed Jan. 13, 1978, Ser. No. 869,156
Term of patent 14 years
Int. Cl. D7—*02;* D9—*05*
U.S. Cl. D7—77

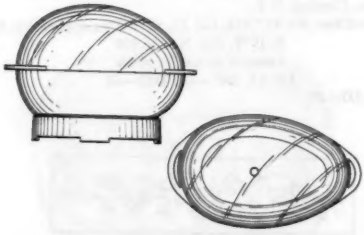


255,756

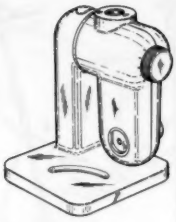
EGG COOKER

Raymond W. Dybala, Chicago, Ill., assignor to Sunbeam Corporation

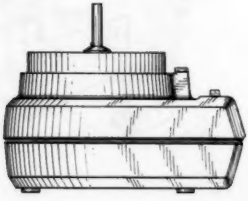
Filed Jul. 10, 1978, Ser. No. 922,955
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94



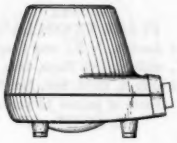
255,757
KITCHEN APPLIANCE MOTOR
Rolf Feil, Wasserburg, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 27, 1976, Ser. No. 754,448
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1976, 51.4522
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—153



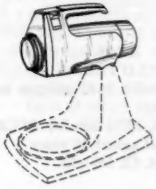
255,758
FOOD PROCESSOR BASE
Norman A. Steinkamp, La Grange Park, and Bernard B. Bluestein, Des Plaines, both of Ill., assignors to Sunbeam Corporation
Filed Jul. 3, 1978, Ser. No. 921,932
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—153

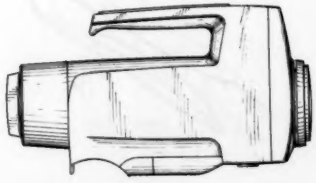


255,759
POWER UNIT FOR A BLENDER OR THE LIKE
Robert O. Ernest, Oak Park, Ill., assignor to Sunbeam Corporation
Filed Dec. 8, 1978, Ser. No. 967,672
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—154

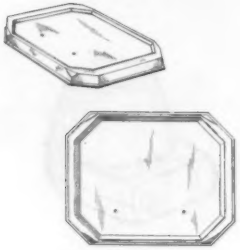


255,760
MIXER
Robert O. Ernest, Oak Park; Richard K. Thomas, Elk Grove Village, and Gordon T. Guth, Evanston, all of Ill., assignors to Sunbeam Corporation
Filed Jul. 14, 1978, Ser. No. 924,592
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—158

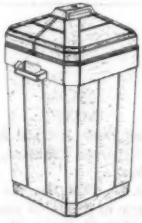




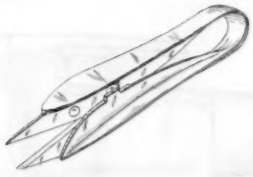
255,761
HAMPER COVER
Paul Bogner, 8952 Faust Cir., Huntington Beach, Calif. 92646
Filed Mar. 30, 1978, Ser. No. 891,935
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—163



255,762
PLANK TRASH CAN
Norman Lee, East Aurora, N.Y., and Clayton J. Ammondson, Reidsville, N.C., assignors to Zarn, Inc., Reidsville, N.C.
Filed May 8, 1978, Ser. No. 903,998
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—194

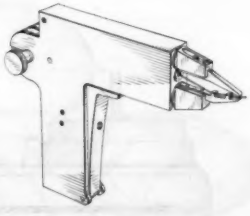


255,763
CLIPPERS
William C. Ferguson, Denville, N.J., assignor to Cooper Industries Inc., Houston, Tex.
Filed Dec. 16, 1977, Ser. No. 861,293
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5



255,764
ROTARY LAWN EDGER, TRIMMER OR SIMILAR ARTICLE
Marco H. Lombard, Houston, Tex., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Mar. 3, 1978, Ser. No. 883,063
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—08

255,765
MANUAL WELDING IMPLEMENT
Basil D. Crooks, and R. Brian P. Bennett, both of Toronto, Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Jun. 17, 1977, Ser. No. 807,486
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



255,766

ADHESIVE-APPLYING TOOL

Howard N. Wieland, Jr., Hanover, Mass., assignor to The Dexter Corporation, Windsor Locks, Conn.

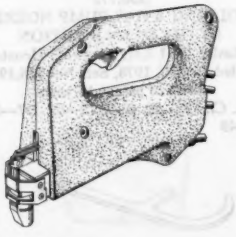
Filed Jan. 25, 1978, Ser. No. 872,234
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

255,767

WELDING GUN

Donald H. Ettinger, Royal Oak, Mich., assignor to USM Corporation, Farmington, Conn.

Filed Feb. 1, 1978, Ser. No. 874,270
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—30

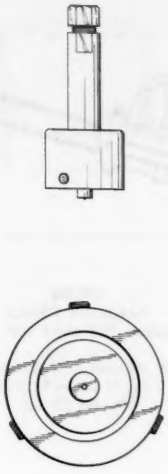


255,768

HUB PULLING DEVICE

Jim L. Immel, and Carl E. Stitt, both of P.O. Box 32884, Oklahoma City, Okla. 73123

Filed May 30, 1978, Ser. No. 910,445
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—51

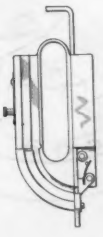


255,769

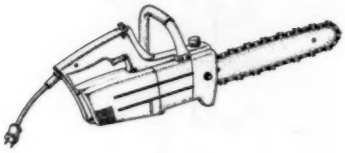
INSERTION TOOL FOR INSERTING TWO-LEADED ELECTRICAL CAPACITORS, AND THE LIKE, INTO PRINTED CIRCUIT BOARDS

Denver Braden, San Diego, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.

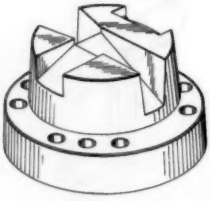
Filed Apr. 20, 1978, Ser. No. 910,547
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—51



255,770
CHAIN SAW
Kazumasa Asamoto, Hiroshima, Japan, assignor to Shindaiwa Kogyo Co., Ltd., Hiroshima, Japan
Filed Feb. 21, 1978, Ser. No. 879,871
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—65



255,771
GLUE GUN HOLDER
Maria I. Cruz, 252811 Pericia, Mission Viejo, Calif. 92691
Filed Nov. 30, 1977, Ser. No. 855,958
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—71

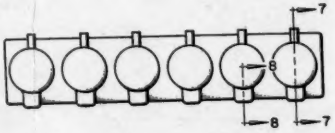


255,772
QUARTER-TURN FASTENER
Norman S. Johnson, New Milford, and Robert J. Trotter, Clinton, both of N.J., assignors to United Products Inc.
Filed Oct. 4, 1977, Ser. No. 839,266
Term of patent 14 years
Int. Cl. D08—*08*
U.S. Cl. D8—331

255,773
CLIP FOR HOLDING A GAS PUMP NOZZLE TRIGGER IN THE OPEN POSITION
Walter O. A. Raske, 9051 Katy Freeway, Houston, Tex. 77024
Filed Jul. 26, 1978, Ser. No. 928,198
Term of patent 14 years
Int. Cl. D8—*08, 05;* D15—*02;* D7—*06*
U.S. Cl. D8—349

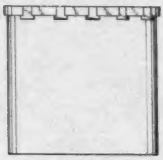
255,774
HOOK
Norman F. Soucy, 91 Garfield Ave., Lynn, Mass. 01905
Filed Mar. 22, 1978, Ser. No. 889,622
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—371

255,775
PACKAGING CONTAINER
Anton H. Clemens, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Sep. 6, 1977, Ser. No. 830,907
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—18



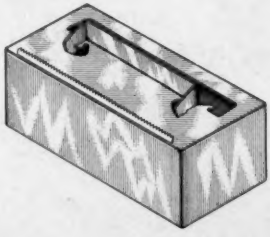
255,776
BOTTLE
William J. Britt, Greenville, S.C., assignor to Morton-Norwich Products, Inc., Greenville, S.C.
Filed Mar. 23, 1978, Ser. No. 889,581
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60

255,777
MEDICINE CONTAINER
Fred H. Lowe, 4324 Thunder Rd., Dallas, Tex. 75234
Filed Mar. 20, 1978, Ser. No. 888,097
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185

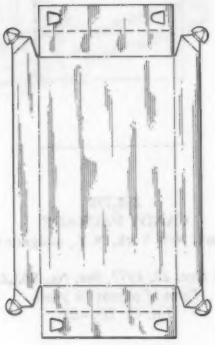


255,778
CANDY PACKAGE
Lawrence D. Albert, New York, N.Y., assignor to Altray Company, Inc.
Filed Dec. 22, 1977, Ser. No. 863,214
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193

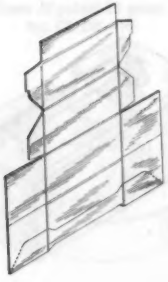
255,779
DISPENSING BOX FOR SHEET MATERIAL
Richard T. Clatterbuck, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company
Filed Aug. 22, 1977, Ser. No. 826,500
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



255,780
TRAY BLANK
Valdis Kuplis, Bourbonnais, Ill., assignor to Olinkraft, Inc., Denver, Colo.
Filed Oct. 27, 1977, Ser. No. 846,237
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245

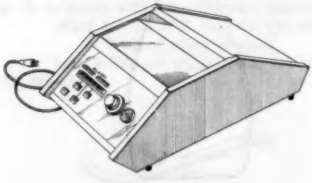


255,781
FLIP TOP DISPENSER BOX BLANK
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Nov. 10, 1977, Ser. No. 850,223
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245

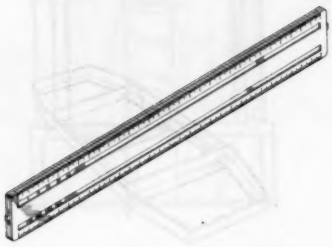


255,782
TIE STRAP
Lawrence J. Forest, Palo Alto, Calif., assignor to GTE Products Corporation, Stamford, Conn.
Filed May 31, 1977, Ser. No. 802,233
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—252

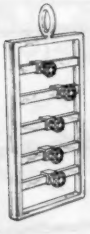
255,783
LETTER BOMB DETECTOR
Ronald B. Hays, 15956 Shady Grove Rd., Gaithersburg, Md. 20760
Filed Dec. 21, 1977, Ser. No. 862,985
Term of patent 14 years
Int. Cl. D10—*04, 05*
U.S. Cl. D10—46



255,784
MULTIPLE SCALE RULE
Douglas D. Seely, Jr., 54743 Merrifield Dr., Mishawaka, Ind. 46514
Filed Apr. 13, 1978, Ser. No. 896,194
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71

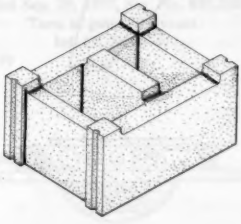


255,785
PENDANT
Paul I. Bishton, Sutton Coldfield, England, assignor to Strada Jewellery Limited, Birmingham, England
Filed Mar. 20, 1978, Ser. No. 888,679
Claims priority, application United Kingdom, Feb. 2, 1978, 983196/78
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D11—43

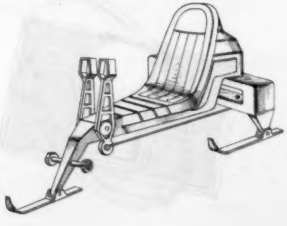


255,786
DESIGN FOR A PICTURE PLAQUE
Thomas A. Lewis, 946 W. 129th Pl., Chicago, Ill. 60649
Filed Aug. 2, 1978, Ser. No. 930,153
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—136

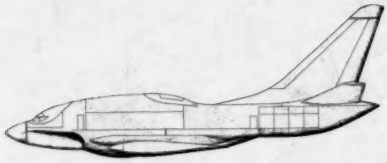
255,787
PLANT PROPAGATING BLOCK
Coatus L. Morehead, Jr., Athens, Ga., assignor to Flowers, Inc., Athens, Ga.
Filed Jan. 12, 1978, Ser. No. 869,025
Term of patent 14 years
Int. Cl. D11—*02*; D25—*01*
U.S. Cl. D11—155

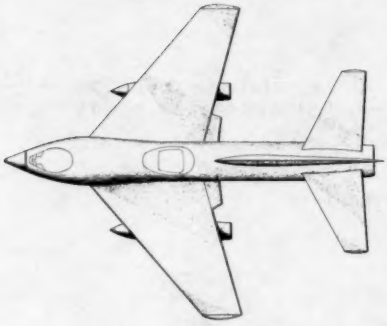


255,788
SKI SLED
Thomas A. Gustafson, 6266 Halverson Dr., Rockford, Ill. 61109
Filed Nov. 1, 1977, Ser. No. 847,679
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—9

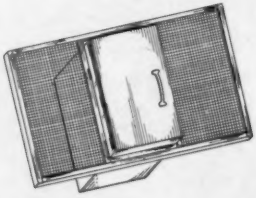


255,789
JET CARGO AIRCRAFT
Michael C. Bowers, 2520 Kecoughton Rd., Hampton, Va. 23661
Filed May 17, 1977, Ser. No. 797,821
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—71

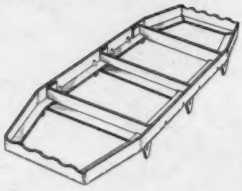




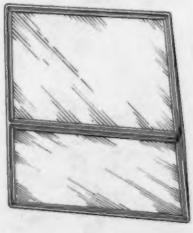
255,790
COMBINED CHAIN CONTAINER AND STEP PLATE FOR TRACTORS
Michael E. McManigal, Rte. 2, Box 19 C, Council Bluffs, Iowa 51501
Filed Apr. 3, 1978, Ser. No. 893,106
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—96



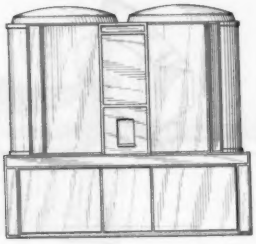
255,791
TRACTION GRILLE FOR VEHICLE
Guy LaPointe, 1857 Cambray, St-Bruno, Quebec, Canada (J3G 3J4)
Filed May 1, 1978, Ser. No. 901,992
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—154

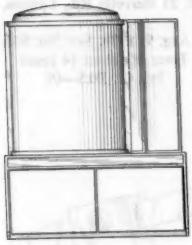


255,792
AUTOMOTIVE REARVIEW MIRROR
John L. Harrison, 3906 Hays, Wellington, Colo. 80549
Filed Oct. 25, 1977, Ser. No. 845,254
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187

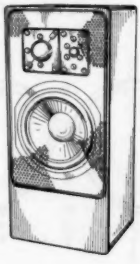


255,793
AUTOMATIC TAPE CARTRIDGE SELECTING AND PLAYING MECHANISM
John P. Jenkins, Towanda, Ill., assignor to International Tapetronics Corporation, Bloomington, Ill.
Filed Apr. 11, 1978, Ser. No. 895,303
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6

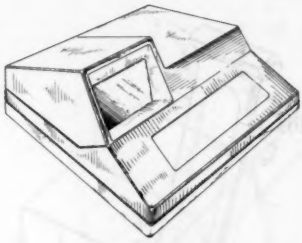




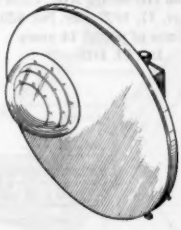
255,794
LOUDSPEAKER
Dieter Rams, Kronberg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jan. 3, 1978, Ser. No. 866,601
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 73 MR 8632
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—34



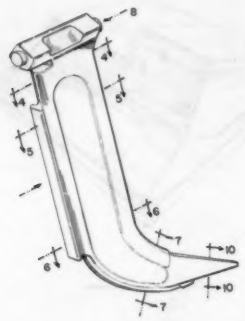
255,795
COMPUTER TERMINAL HOUSING
John F. Marshall, Provo, and James R. Huffman, Orem, both of Utah, assignors to Lektronics Systems, Inc., Provo, Utah
Filed Nov. 13, 1978, Ser. No. 960,500
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45



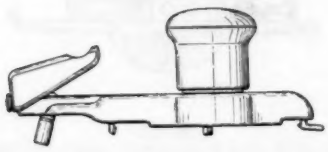
255,796
WALL MOUNTED MUSIC-RESPONSIVE COLOR ORGAN
Remo Saraceni, Philadelphia, Pa., assignor to Novitas, Inc., Los Angeles, Calif.
Filed Sep. 29, 1977, Ser. No. 837,759
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—99



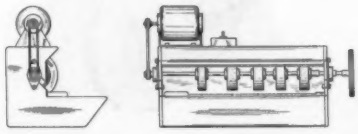
255,797
PLOW SHANK
John W. Ryan, Yowie Bay, Australia, assignor to Agrowplow Pty Limited, Yowie Bay, Australia
Filed Apr. 5, 1978, Ser. No. 893,718
Claims priority, application Australia, Nov. 21, 1977, 73371/77
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—11



255,798
TAPPING DEVICE
Helmut Wiedmann, Hundsbergstrasse 29, 7100 Heilbronn, Fed. Rep. of Germany
Filed Oct. 16, 1978, Ser. No. 951,404
Claims priority, application Fed. Rep. of Germany, May 22, 1978, 863
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D15—112

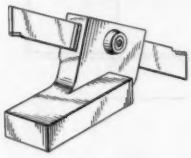


255,799
LAPIDARY MACHINE
Earl Christensen, 1286 Hermitage Ave., Clearwater, Fla. 33516
Filed Nov. 11, 1977, Ser. No. 850,821
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—125



255,800
CUTTING INSERT
Joseph E. Kendra, Latrobe, Pa., assignor to Kennametal Inc.
Filed Jul. 26, 1977, Ser. No. 819,078
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139

255,801
COMBINED LATHE TOOL AND HOLDER THEREFOR
Howard A. Treloar, 21 Barretts Rd., Lynton, South Australia, 5062, Australia
Filed Aug. 9, 1978, Ser. No. 933,118
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139

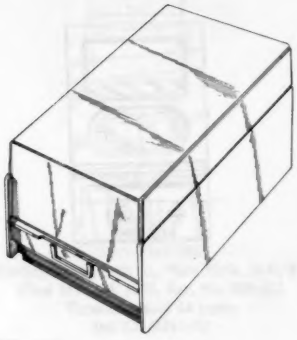


255,802
PAIR OF SPECTACLES
Richard W. Canavan, III, P.O. Box 6, South Woodstock, Conn. 06267
Filed Jun. 19, 1978, Ser. No. 916,697
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—65

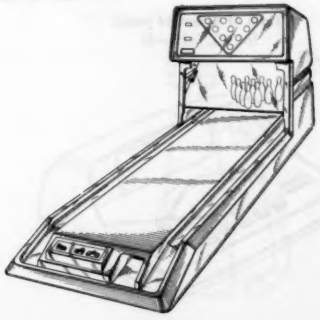
255,803
COMBINED GUITAR AND SYNTHESIZER KEYBOARD
Jerome C. Leal, 5954 E. El Monte, Fresno, Calif. 93727
Filed Jan. 28, 1977, Ser. No. 763,344
Term of patent 3½ years
Int. Cl. D17—*01, 03*
U.S. Cl. D17—2

255,804
PRONUNCIATION-CODED TYPE FONT
Chester L. James, Sr., 123 W. Twelfth St., Beaumont, Calif. 92223
Filed Jul. 3, 1978, Ser. No. 921,359
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24

255,805
HINGED TOP CARD FILE
James F. Hampshire; Greg P. Terek, and Richard C. Sankovich, all of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Dec. 12, 1977, Ser. No. 859,954
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



255,806
BOWLING GAME CASING
John A. Vernon, Montgomery, Mass., and Lawrence L. Reiner, Woodbury, N.Y., assignors to Louis Marx & Co., Inc., Stamford, Conn.
Filed Feb. 13, 1978, Ser. No. 877,581
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—7

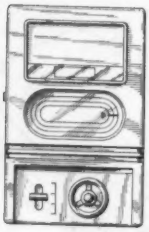


255,807

ELECTRONIC RACING GAME, OR SIMILAR ARTICLE

Lee F. Radtke, Lake Zurich, Ill., assignor to Interstate Industries, Inc., Mundelein, Ill.

Filed Oct. 23, 1978, Ser. No. 953,794
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—27

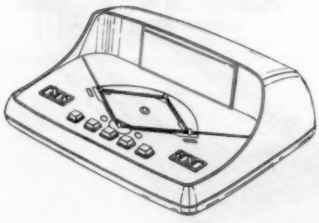


255,808

BASEBALL GAME CASING

Johnson C. Tai, Kowloon, Hong Kong, assignor to Micro Electronics Limited, Kowloon, Hong Kong

Filed Jun. 20, 1978, Ser. No. 917,407
Claims priority, application United Kingdom, Feb. 1, 1978, 983165/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—28

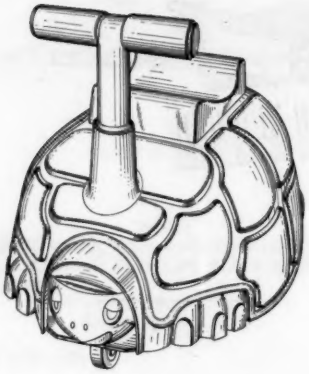


255,809

RIDING TOY

Edward B. Bretschger, Cos Cob, Conn., assignor to Louis Marx & Co., Inc., Stamford, Conn.

Filed Feb. 10, 1978, Ser. No. 876,791
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—74

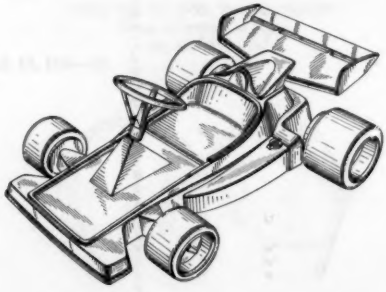


255,810

RIDING TOY

Edward B. Bretschger, Cos Cob, Conn., assignor to Louis Marx & Co., Inc., Stamford, Conn.

Filed Feb. 10, 1978, Ser. No. 876,792
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—137

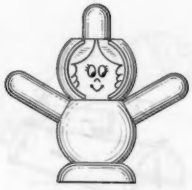


255,811
TOY RACCOON
Patricia I. Holstine, 16 N. Main, Conrad, Mont. 59425
Filed Aug. 14, 1978, Ser. No. 933,729
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148

255,812
STUFFED TOY HORSE WITH HAT
Zula B. Cox, Rt. 1, Box 5A, Folsom, La. 70437
Filed Aug. 11, 1978, Ser. No. 933,252
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—165

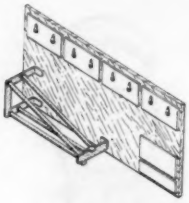
255,813
TOY FIGURE
John A. Pape, Clifton, and Norman Walker, London, both of England, assignors to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Jan. 24, 1978, Ser. No. 872,348
Claims priority, application United Kingdom, Dec. 2, 1977, 982467/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166

255,814
TOY FIGURE
Howard Wexler, 300 E. 40th St., New York, N.Y. 10016
Filed Mar. 23, 1978, Ser. No. 889,612
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—168



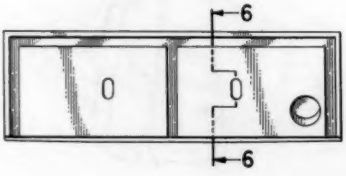
255,815
EXERCISER
Edith O. Hallerman, 41-06 Case St., Elmhurst, N.Y. 11373
Filed Sep. 20, 1978, Ser. No. 944,811
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—198

255,816
COMBINED TENNIS RACKET HOLDER AND TENNIS COURT CONTROL PANEL
Bert M. Trubody, Taylorsville; William W. White, Los Gatos, and David R. Vonasek, Milpitas, all of Calif., assignors to Patterson-Williams Manufacturing Co., Santa Clara, Calif.
Filed Feb. 17, 1978, Ser. No. 879,011
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—199

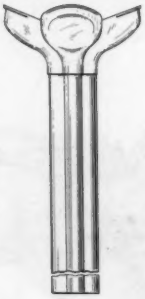


255,817
TENNIS BALL RETRIEVER
Donald O. Wright, 26333 Belle Porte Ave., Harbor City, Calif. 90710
Filed Apr. 4, 1978, Ser. No. 893,501
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—206

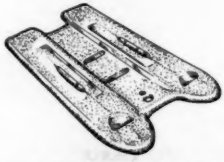
255,818
GOLF CLUB HEAD
William L. Barber, 5892 Lourdes Dr., Huntington Beach, Calif. 92649
Filed Feb. 10, 1978, Ser. No. 876,586
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219



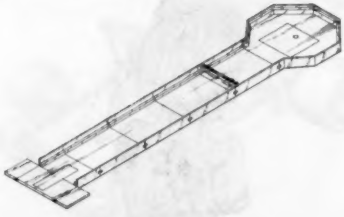
255,819
GOLF CLUB HOLDER
Herman E. Stock, P.O. Box 1718, Pompano Beach, Fla. 33061
Filed Feb. 6, 1978, Ser. No. 875,134
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—221



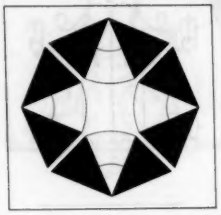
255,820
DUAL SKI STRUCTURE FOR WATER SKIING AND SNOW SLEDDING
Thomas W. Borden, 3444 Laclede Ave., Los Angeles, Calif. 90039; Richard A. Hulst, 3971 Abella, La Crescenta, Calif. 91214, and Gary M. Yaeger, 3900 Karen Lynn Dr., Glendale, Calif. 91200
Filed Nov. 1, 1977, Ser. No. 847,526
Term of patent 14 years
Int. Cl. D21—*02*; D12—*14*
U.S. Cl. D21—229



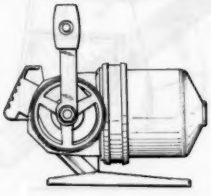
255,821
GOLF PUTTING TARGET
Jan Göransson, Ekliden 20, Örkelljunga, Sweden (286 00)
Filed Dec. 2, 1977, Ser. No. 857,200
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—234



255,822
GUN TARGET
Charles R. Dulude, 33 Burnside Ave., East Hartford, Conn. 06108
Filed Apr. 7, 1978, Ser. No. 894,640
Term of patent 14 years
Int. Cl. D22—*04*
U.S. Cl. D22—15

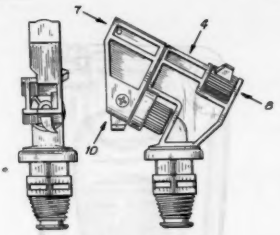


255,823
FISHING REEL
Chuuji Deguchi, Musashino, and Shosuke Nakauchi, Saitama, both of Japan, assignors to Olympic Fishing Tackle Co., Ltd., Saitama, Japan
Filed Jan. 5, 1978, Ser. No. 867,295
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



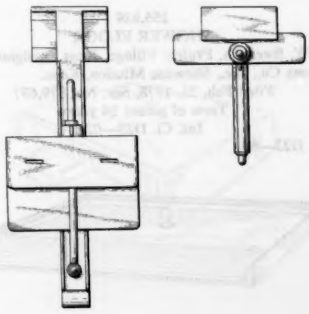
255,824
ARCHERY BOW STRING RELEASE GRIP
Paul D. MacWilliams, 4039 Brunswick Ave., Los Angeles, Calif. 90039, and Mark A. Santos, 3701 Cazador St., Los Angeles, Calif. 90041
Filed Jun. 26, 1978, Ser. No. 919,398
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—99

255,825
LAWN SPRINKLER
Charles T. Hardy, Wilton Manors, Fla., assignor to Safe-T-Lawn, Inc., Hialeah, Fla.
Filed Oct. 25, 1977, Ser. No. 844,451
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7

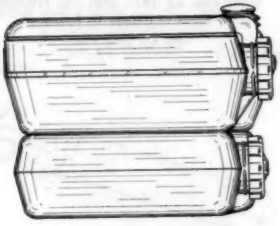


255,826
HAND PUMP
Ethan A. Stout, and Jerry W. Reinsch, both of Houston, Tex., assignors to Spartan Labs, Inc., Houston, Tex.
Filed Feb. 22, 1977, Ser. No. 770,450
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—15

255,827
FLUSH TANK VALVE CLOSER
Walter Makhobey, 3109 E. Caley Ave., Littleton, Colo. 80121
Filed Feb. 27, 1978, Ser. No. 881,887
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40

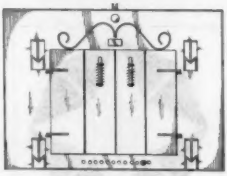


255,828
TOILET
Frederick A. Butler, Redford Semele, England, and William Croonenberg, Roosendaal, Netherlands, assignors to Thetford Corporation, Ann Arbor, Mich.
Filed Oct. 4, 1978, Ser. No. 948,340
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48

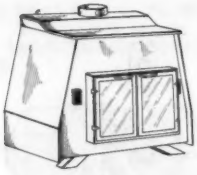


255,829
SHOWER FLOOR
Arthur W. Swenson, Prairie Village, Kans., assignor to Stern-Williams Co., Inc., Shawnee Mission, Kans.
Filed Feb. 21, 1978, Ser. No. 879,697
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69

255,830
FIREPLACE HEATER
Homer P. Hansen, 1925 W. 24th St., Eugene, Oreg. 97405
Filed Aug. 8, 1978, Ser. No. 932,036
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—95



255,831
HEATING STOVE
Roray J. Sandau, Rte. 1, Box 729, Salem, Oreg. 97304, and Gordon H. McKee, 7120 Perrydale Rd., Amity, Oreg. 97101
Filed Jul. 7, 1978, Ser. No. 923,045
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

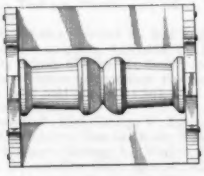


255,832
ROOM VAPORIZER
Ernst Reichl, München, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 7, 1978, Ser. No. 922,787
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—148

255,833
INFANT OXYGEN HOOD
Norman C. Crandall, Costa Mesa, Calif., assignor to Shiley Incorporated
Filed May 26, 1978, Ser. No. 910,000
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1.1

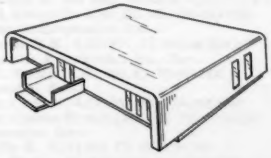
255,834
DENTAL INSTRUMENT HANDLE
Sigurd Lindén, Teatergatan 4, Linköping, Sweden
Filed Nov. 2, 1977, Ser. No. 847,953
Claims priority, application Sweden, May 13, 1977, 771112; May 13, 1977, 771113
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—16

255,835
FOOT MASSAGER OR SIMILAR ARTICLE
Lon C. Bentsen, Rte. 1, Box 559, Toledo, Oreg. 97391
Filed Jan. 24, 1978, Ser. No. 872,016
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



255,836
DENTAL CAPSULE
Edward A. Weissenburger, Mercerville, N.J., assignor to Johnson & Johnson Dental Products Company, East Windsor, N.J.
Filed Mar. 30, 1979, Ser. No. 25,428
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—56

255,837
BUILDING STRUCTURE
John H. Leasure, 12 Littlejohn Rd., Cape Elizabeth, Me. 04107, and David D. Leasure, 505 Sunset Rd., Falmouth, Me. 04105
Filed Jul. 11, 1978, Ser. No. 923,627
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—18



255,838

PLASTIC STORM DOOR

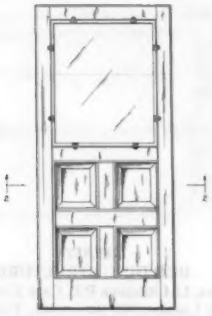
Peter R. Emanuel, Marine City, Mich., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 16, 1978, Ser. No. 869,936

Term of patent 14 years

Int. Cl. D25—*02*

U.S. Cl. D25—48



255,839

BATTERY-OPERATED LIGHT

Knut O. Sassmannshausen, D-6580 Idar-Oberstein, Rothenbach, Fed. Rep. of Germany

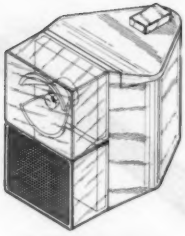
Filed Jul. 27, 1977, Ser. No. 819,381

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 1436

Term of patent 14 years

Int. Cl. D26—*02*

U.S. Cl. D26—37



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TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Bonnierforetagen: *See*—
Bjorklund, Knut B., 4,211,766, Cl. 424-88.000.

AB Celleco: *See*—
Frykhult, Rune H.; and Rundqvist, Lars-Goran, 4,211,643, Cl. 209-211.000.

Abbott Laboratories: *See*—
Lerma, Jesse P., 4,211,981, Cl. 328-127.000.

Abelitis, Andris, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for the production of cement clinker low in alkali from alkali-containing raw material. 4,211,573, Cl. 106-100.000.

Abex Corporation: *See*—
Framberg, Norman S., 4,211,150, Cl. 92-119.000.
Kulik, George J., 4,212,051, Cl. 362-287.000.

Abitibi Paper Company Ltd.: *See*—
Zajic, James E.; Hill, Martha A.; Manchester, Donald F.; and Muzika, Karel, 4,211,645, Cl. 210-7.000.

Abrahamson, John H. Milking. 4,211,184, Cl. 119-14.020.

Acampora, Vincent P., to General Electric Company. Circuit breaker bell alarm and lockout accessory apparatus. 4,211,989, Cl. 335-17.000.

Acker Drill Company, Inc.: *See*—
Multakh, Leonid, 4,211,294, Cl. 175-330.000.

Ackley, Richard H., to PPG Industries, Inc. Composite strands of resin, carbon and glass and product formed from said strands. 4,211,818, Cl. 428-367.000.

Adams, Thomas H.; Beck, James P.; and Menson, Robert C., to Baxter Travenol Laboratories, Inc. Method and apparatus for making novel particulate compositions. 4,211,015, Cl. 34-5.000.

Adleman, George L.; and Stettiner, Robert L., to Hewlett-Packard Company. Smoothing a raster display. 4,212,009, Cl. 340-728.000.

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Bloyd, Jon A., 4,211,956, Cl. 315-208.000.

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Mormann, Werner; Bofinger, Gerhard; and Wolfie, Wilfried, 4,211,232, Cl. 128-305.500.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Hadni, Armand, 4,211,821, Cl. 428-411.000.

AGFA-Gevaert, A.G.: *See*—
Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, 4,211,478, Cl. 354-60.00L.

Agroferm AG: *See*—
Lafferty, Robert M., 4,211,846, Cl. 435-141.000.

Ahmed, Quazi: *See*—
Thiele, Kurt; Ahmed, Quazi; Scharen, Walter; and Meyer, Jacques, 4,211,551, Cl. 71-116.000.

Ahrens, James J.: *See*—
Hughes, Peter I.; Lynch, Robert J.; and Ahrens, James J., 4,211,343, Cl. 222-130.000.

Air Logistics Corporation: *See*—
Stiles, Kenneth M., 4,211,591, Cl. 156-83.000.

Air Products and Chemicals, Inc.: *See*—
Poole, Brian; and Young, Philip J., 4,211,390, Cl. 266-207.000.

Airscrew Howden Limited: *See*—
Hawes, Stanley P., 4,211,514, Cl. 415-191.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Sakakibara, Naoji; and Hashimoto, Nobuyuki, 4,211,257, Cl. 137-625.650.

Ajinomoto Company, Incorporated: *See*—
Nakamori, Shigeru; Yokozeki, Kenzo; Mitsugi, Koji; Eguchi, Chikahiko; and Iwagami, Hisao, 4,211,840, Cl. 435-107.000.

Akagi, Kimiko: *See*—
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, 4,211,882, Cl. 562-416.000.

Akao, Takeshi: *See*—
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.

Akell, Robert B.; Muller, Werner C.; and Pick, Rudolph, to Syngas Company. Naphtha stripping. 4,211,638, Cl. 208-180.000.

Akers, Larry D.; Scholl, Charles H.; Smith, Joseph S.; and Williams, Edward A., to Nordson Corporation. Hot melt adhesive dispensing system of the hand held gun. 4,211,262, Cl. 141-2.000.

Akhmetov, Raul S.: *See*—
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Akiyama, Ryo; and Igarashi, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Motor speed adjusting apparatus. 4,211,967, Cl. 318-490.000.

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Asberg, Gustaf A., 4,211,438, Cl. 285-7.000.

Akutagawa, Kazuhiko: *See*—
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.

Akutsu, Eisaku: *See*—
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Akzo N.V.: *See*—
Goverde, Bastiaan C.; Janssen, Peter S. L.; and Kostner, Gerhard M., 4,211,530, Cl. 23-230.00B.

Akzona Incorporated: *See*—
Henry, Charles L.; and White, James E., 4,211,678, Cl. 260-22.00D.
McCorsley, Clarence C., III; and Varga, Julianna K., 4,211,574, Cl. 106-163.00R.

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Bastgen, Wendel, 4,211,162, Cl. 100-36.000.

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Neubeck, Kurt; and Julien, Hermann, 4,211,000, Cl. 29-714.000.

Alfs, Helmut: *See*—
List, Ferdinand; Klos, Julius; and Alfs, Helmut, 4,211,506, Cl. 406-55.000.

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Deverell, Harry E., 4,211,042, Cl. 51-281.00R.

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Alles, Harold G.; and Kubik, Peter S., to Bell Telephone Laboratories, Incorporated. Electric-signal controlled hand-held printer. 4,211,012, Cl. 33-18.00R.

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Allis-Chalmers Corporation: *See*—
Jennrich, George J., 4,211,524, Cl. 425-296.000.
Quick, David C.; and Marsch, James E., 4,211,313, Cl. 192-4.00A.

Allison, Ralph E., to BMI, Inc. Gunning apparatus for in situ spraying of refractory material. 4,211,367, Cl. 239-226.000.

Alper, Yekutiel: *See*—
Sarig, Yoav; Nahir, David; and Alper, Yekutiel, 4,211,062, Cl. 56-328.00R.

Altermatt, Hans; and Wick, Arnold, to Ciba-Geigy Corporation. Process for dyeing high-molecular organic material in the melt. 4,211,688, Cl. 260-40.00P.

Altex Scientific, Inc.: *See*—
Magnussen, Haakon T., Jr.; and Moeller, Roy P., 4,211,486, Cl. 356-328.000.

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Amass, Charles E.: *See*—
Ross, James W., Jr.; Amass, Charles E.; Baer, Charles S.; and Thomae, Martin H., 4,211,623, Cl. 204-195.00M.

Amemiya, Yoshihito; and Kato, Kotaro, to Nippon Telegraph and Telephone Public Corporation. Trimming method for resistance value of polycrystalline silicon resistors especially used as semiconductor integrated circuit resistors. 4,210,996, Cl. 29-610.00R.

American Can Company: *See*—
Hein, Carl C.; Silver, Harold K.; Spitz, Joseph J.; and Seidler, Donald W., 4,211,326, Cl. 206-484.000.
Langseder, Neal E., 4,211,335, Cl. 220-269.000.

American Color & Chemical Corporation: *See*—
Desai, Kishor A., 4,211,697, Cl. 260-158.000.

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Lin, Yang-I; and Lang, Stanley A., Jr., 4,211,726, Cl. 568-424.000.
Lodhi, Shahid A.; and Sims, Bernard, 4,211,793, Cl. 424-305.000.
Shepherd, Robert G., 4,211,783, Cl. 424-263.000.

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Lee, Thomas B. K., 4,211,877, Cl. 549-44.000.

American Machine & Hydraulics, Inc.: *See*—
Grimaldo, Samuel, 4,211,103, Cl. 72-316.000.

AMP Incorporated: *See*—
Chandler, Curtis S., 4,211,463, Cl. 339-103.00M.
Reynolds, Charles E., 4,211,466, Cl. 339-176.0MF.

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Baker, Billy R., 4,212,043, Cl. 360-104.000.
Lemoine, Maurice G., 4,212,027, Cl. 358-8.000.
Rudnick, Paul J.; and Heaslett, Alastair M., 4,211,997, Cl. 371-38.000.

Amprim, Lawrence; and Williams, Frederick P., to Monarch Marking Systems, Inc. Engine compartment label. 4,211,021, Cl. 40-2.00R.

Ananievsky, Mikhail G.: *See*—
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.

Anapol, James H.: *See*—
Forsythe, Arthur M.; Anapol, James H.; and Reich, Zygmund, 4,212,064, Cl. 364-424.000.

Anderson, Arthur E.: *See*—
Vaerewyck, Eugene G.; Miller, Robert C.; and Anderson, Arthur E., 4,211,922, Cl. 250-203.00R.

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Mason, Leonard; and Anderson, Clifford, 4,211,290, Cl. 175-321.000.

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Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.

Andow, Fumio; Matsushima, Tetsuo; and Okamoto, Eiichi, to Tokyo Shibaura Denki Kabushiki Kaisha; and Tokyo Denryoki Kabushiki Kaisha. Distance relaying systems. 4,212,046, Cl. 361-80.000.

Andre, Claude: *See*—
Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, 4,211,772, Cl. 424-180.000.

Andrejko, Edward S.: *See*—
Eichelberger, Charles W.; and Andrejko, Edward S., 4,211,931, Cl. 290-40.00A.

Angelakos, Nicholas. Picture frame. 4,211,022, Cl. 40-152.100.

Anke, Heidrun: *See*—
Scheer, Martin; Anke, Heidrun; Konig, Wilfried; and Zahner, Hans, 4,211,787, Cl. 424-279.000.

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Kuroda, Masahiro, 4,211,975, Cl. 455-75.000.

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Anzai, Shiro: *See*—
Watabe, Yoji; Fujii, Yoshihiko; Anzai, Shiro; and Furukawa, Junji, 4,211,676, Cl. 260-2.300.

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Appleton Papers Inc.: *See*—
Myers, Hugh K; and Hayford, Donald E., 4,211,437, Cl. 282-27.500.

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Jamgochian, Ralph; Oley, Leonard; Stachnik, Joseph; and Tutella, Alfred L., 4,211,342, Cl. 222-129.400.

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Vicario, Gian P.; Penco, Sergio; and Arcamone, Federico, 4,211,864, Cl. 536-17.00A.

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Verjux, Jean, 4,211,318, Cl. 198-377.000.

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Lawson, John E., 4,211,281, Cl. 166-345.000.

Arzola, Alberto H. Field game. 4,211,413, Cl. 273-411.000.

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Pews, R. Garth; and Ash, Mezzie L., 4,211,873, Cl. 546-346.000.

Asian Industry Co., Ltd.: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.

Associated Engineering Limited: *See*—
Cox, Michael D.; Hunt, Norman; and Colver, Kenneth W., 4,211,193, Cl. 123-352.000.

Ast, Orvo: *See*—
Dubreuil, Robert, deceased; Ast, Orvo; and Pavilanis, Vytautas, 4,211,843, Cl. 435-2.000.

Astec, Industries, Inc.: *See*—
Brock, James D.; and Mize, Erbie G., 4,211,490, Cl. 366-11.000.

Atlan-Tol Industries, Inc.: *See*—
Gaskill, David M., Jr., 4,211,992, Cl. 335-222.000.

Atlantic Richfield Company: *See*—
Peck, Robert L., 4,211,828, Cl. 429-11.000.

Ato Chimie: *See*—
Michel, Jean-Claude; and Potin, Philippe, 4,211,700, Cl. 260-239.30A.

Atoji, Nobuhisa; Matsumoto, Takashi; Kusumoto, Shoichi; Sato, Kazue; and Hasegawa, Mitsuhiro, to Matsushita Electric Industrial Co., Ltd. Headphone with two resonant peaks for simulating loudspeaker reproduction. 4,211,898, Cl. 179-156.00R.

Audi Nsu Auto Union Aktiengesellschaft: *See*—
Rocchio, Rodolfo; Naumann, Fritz; and Strotkotter, Heinrich, 4,211,200, Cl. 123-445.000.

Aunis, Jean-Marie, to Regie Nationale des Usines Renault. Safety device for fastener driving apparatus. 4,211,353, Cl. 227-156.000.

aus der Funten, Helmut; and Vogt, Wilhelm, to Dynamit Nobel Aktiengesellschaft. Method of preparing phthalide. 4,211,711, Cl. 260-343.30R.

Austermuhle-Bertola, Helena, to Shell International Research Maatschappij B.V. Preparation of cyano-substituted cyclopropane derivatives. 4,211,720, Cl. 260-464.000.

Avco Everett Research Laboratory, Inc.: *See*—
Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., 4,211,983, Cl. 331-94.5PE.

Awano, Takeshi; and Komizo, Toshiyuki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Actuator device for seat belt mechanism for motor vehicle. 4,211,431, Cl. 280-804.000.

B & A Engineering Company Ltd.: *See*—
Cakebread, William A.; and Pryke, Graham R., 4,212,006, Cl. 340-685.000.

B. K. Sweeney Manufacturing Company: *See*—
Krieger, Raymond L., 4,210,990, Cl. 29-263.000.

B.R.I.C. (Burea de Recherche pour l'Innovation et la Convervence: *See*—
Gravisse, Philippe E.; and Van Schoote, Jacques F., 4,211,813, Cl. 428-263.000.

B S & B Safety Systems, Inc.: *See*—
Witten, John E.; Wood, Loren E.; and Short, Edward H., III, 4,211,334, Cl. 220-89.00A.

Babinski, John P.; Bertelsen, Bruce I.; Raacke, Karl H.; and Sirgo, Valdeko H., to International Business Machines Corporation. Fluidic transport intersection. 4,211,505, Cl. 406-19.000.

Baclit, Paul S. Detachable visor arrangement. 4,210,972, Cl. 2-10.000.

Baer, Charles S.: *See*—
Ross, James W., Jr.; Amass, Charles E.; Baer, Charles S.; and Thomae, Martin H., 4,211,623, Cl. 204-195.00M.

Baird, David B.; Costello, Alan T.; Fishwick, Brian R.; McClelland, Robert D.; and Smith, Peter, to Imperial Chemical Industries Limited. Disperse monoazo dyestuffs derived from 3,5-dinitro-2-amino thiophene as disazo component and an arylamine coupling component. 4,211,696, Cl. 260-152.000.

Baker, Billy R., to Ampex Corporation. Magnetic transducing. 4,212,043, Cl. 360-104.000.

Balasubramanian, N. Method and system for surface contouring. 4,212,073, Cl. 364-562.000.

Balasubramanian, P. S.; Bertin, Claude R.; and Greenspan, Stephen B., to International Business Machines Corporation. Merged array PLA device, circuit, fabrication method and testing technique. 4,212,026, Cl. 357-41.000.

Baldwin Piano & Organ Company: *See*—
Conklin, Harold A., Jr., 4,211,142, Cl. 89-189.000.

Baltensperger, Rudolf; and Pfister, Hans B. Station for suspended track-type railway. 4,211,171, Cl. 104-123.000.

Bandtel, Eberhard: *See*—
Keggenhoff, Berthold; Bandtel, Eberhard; and Rosenkranz, Hans J., 4,211,751, Cl. 422-134.000.

Banks, Robert L., to Phillips Petroleum Company. High octane gasoline components from catalytic cracking gasoline, propylene, and isobutane by disproportionation, cleavage and alkylation. 4,211,885, Cl. 585-316.000.

Baram, Martin. Annular seal for self-cleaning sludge centrifuges. 4,211,361, Cl. 233-20.00A.

Barber, William D.; and Possin, George E., to General Electric Company. Method for fabrication of improved storage target and target produced thereby. 4,212,082, Cl. 365-118.000.

Barcus, Nolla L. Trailer safety hitch. 4,211,428, Cl. 280-511.000.

Barger, Frank L.: *See*—
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,212,070, Cl. 364-500.000.

Barient Company: *See*—
Guangorena, Jesus, 4,211,388, Cl. 254-344.000.

Barkis, Edward; Crummer, Robert R.; and Joyner, James M., to Standard Oil Company (Indiana). Extrusion coating compositions for woven and non-woven polyolefin substrates and articles thereof. 4,211,692, Cl. 260-45.70P.

Barlow, Gordon A.; and Janiszewski, Anthony T., to Gordon Barlow Design. Fighting U.F.O's. 4,211,412, Cl. 273-424.000.

Barnabo, Robert E.; and Hyslop, Karl J., to Barnabo Steel Corporation. Cold drawing die for drawing polygonal shapes. 4,211,104, Cl. 72-467.000.

Barnabo Steel Corporation: *See*—
Barnabo, Robert E.; and Hyslop, Karl J., 4,211,104, Cl. 72-467.000.

Barnett, Charles J.; Emmick, Thomas L.; and Hoying, Richard C., to Eli Lilly and Company. Preparation of substituted 2-aminopyrazines. 4,211,870, Cl. 544-336.000.

Barta, Franz, to BSB Aktiengesellschaft fur Mechanische Beschriftung und Dekoration. Self-adhering, transferable layer of varnish (lacquer) or color. 4,211,809, Cl. 428-201.000.

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Barten, Piet G. J.; and Bijma, Jan, to U.S. Philips Corporation. Method of manufacturing a static convergence unit, and a color display tube comprising a convergence unit manufactured according to the method. 4,211,960, Cl. 315-368.000.

BASF Aktiengesellschaft: *See—*
Halbritter, Klaus, 4,211,875, Cl. 548-342.000.

Bass, Robert F. Dynamic power source. 4,211,078, Cl. 60-413.000.

Bastgen, Wendel, to Alb. Klein & Co. GmbH KG. Process for the batch filtering of suspensions. 4,211,162, Cl. 100-36.000.

Baugh, Daniel W., Jr.: *See—*
Watt, George W.; and Baugh, Daniel W., Jr., 4,211,757, Cl. 423-251.000.

Baumann, Dwight M. Paratransit fare computation and dispatching method. 4,212,069, Cl. 364-467.000.

Baumgartner, Peter; and Kuhne, Robert, to Sulzer Brothers Ltd. Camshaft for an internal combustion engine. 4,211,192, Cl. 123-90.600.

Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U. Device for diagnosing microprogram computers. 4,211,916, Cl. 371-15.000.

Baxter Travenol Laboratories, Inc.: *See—*
Adams, Thomas H.; Beck, James P.; and Menson, Robert C., 4,211,015, Cl. 34-5.000.
Lillegard, Thomas R.; Rollins, Richard A.; and Stauber, Ronald C., 4,211,380, Cl. 248-229.000.

Bayer Aktiengesellschaft: *See—*
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,211,869, Cl. 544-334.000.
Dieterich, Dieter, 4,211,850, Cl. 521-164.000.
Fitzky, Hans G., Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,211,970, Cl. 324-58.50C.
Hartmann, Alfons; Kuhle, Engelbert; and Hammann, Ingeborg, 4,211,790, Cl. 424-285.000.
Hermann, Karl H.; and Dorsch, Hans-Lothar, 4,211,716, Cl. 260-391.000.
Hund, Franz; Linde, Gunter; and Kresse, Peter, 4,211,565, Cl. 106-14.050.
Keggenhoff, Berthold; Bandtel, Eberhard; and Rosenkranz, Hans J., 4,211,751, Cl. 422-134.000.
Klein, Johann, 4,211,289, Cl. 172-686.000.
Kuhlthau, Hans-Peter; Ptaar, Hubertus; and Raue, Roderich, 4,211,436, Cl. 282-27.500.
Muschelknautz, Edgar; Herold, Heiko; Brunner, Kunz; and Horstmann, Walter, 4,211,604, Cl. 159-4.00D.
Scheer, Martin; Anke, Heidrun; Konig, Wilfried; and Zahner, Hans, 4,211,787, Cl. 424-279.000.
Spahrkas, Heinrich; Muller, Josef; Komarek, Ernst; and Luck, Wolfhard, 4,211,529, Cl. 8-94.260.
Wenzel, Wolfgang; and Dieterich, Dieter, 4,211,683, Cl. 260-29.40R.
Winkelmann, Hans D.; Wolf, Karlheinz; Oertel, Harald; and Weimann, Norbert, 4,211,699, Cl. 260-239.30R.

BBC Brown Boveri & Cie.: *See—*
Burnier, Pierre H., 4,211,087, Cl. 62-55.500.

BBC Brown Boveri & Company Limited: *See—*
Graf, Robert; and Meier, Rene, 4,212,015, Cl. 343-883.000.
Henle, Burkhard; Vukasovic, Ivica; and Fiorentzis, Michael, 4,211,934, Cl. 307-98.000.
Kalbfuss, Richard, 4,211,069, Cl. 60-39.020.
Kramer, Wilhelm, 4,211,542, Cl. 55-179.000.
Portmann, Alexandre, 4,211,070, Cl. 60-39.080.
Speil, Peter, 4,211,516, Cl. 416-191.000.
Starcevic, Mihailo, 4,211,383, Cl. 248-603.000.

Beatrice Foods Company: *See—*
Leonard, Rex D.; and Hulstyn, Jan, 4,211,086, Cl. 62-50.000.

Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, to Bayer Aktiengesellschaft. Process for the preparation of tetrachloropyrimidine. 4,211,869, Cl. 544-334.000.

Beck, Hans: *See—*
Bolter, German; Helmle, Herbert; and Beck, Hans, 4,211,599, Cl. 156-494.000.

Beck, James P.: *See—*
Adams, Thomas H.; Beck, James P.; and Menson, Robert C., 4,211,015, Cl. 34-5.000.

Beecham Group Limited: *See—*
Buckle, Derek R.; and Smith, Harry, 4,211,791, Cl. 424-304.000.

Begnaud, John D.: *See—*
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,212,070, Cl. 364-500.000.

Behlert, Austin F. Center pin lock for single-action revolver. 4,211,026, Cl. 42-59.000.

Bell Telephone Laboratories, Incorporated: *See—*
Alles, Harold G.; and Kubik, Peter S., 4,211,012, Cl. 33-18.00R.
Cross, Peter S.; and Schmidt, Ronald V., 4,211,467, Cl. 350-96.140.
Madden, James J., 4,211,459, Cl. 339-75.0MP.
Mogab, Cyril J., 4,211,601, Cl. 156-643.000.
Smith, Arnold R., 4,210,999, Cl. 29-857.000.

Bellis, Robert E., to Coin Controls Limited. Coin chute. 4,211,317, Cl. 194-1.00D.

Bemis, Alan G.: *See—*
Horsfield, Sydney G.; Kuhlmann, George E.; and Bemis, Alan G., 4,211,881, Cl. 562-416.000.

Bender Machine Works, Inc.: *See—*
Schmid, Rolyn A., 4,211,517, Cl. 417-12.000.

Bender, Robert: *See—*
Brown, Douglas B.; and Bender, Robert, 4,211,163, Cl. 100-145.000.

Bendix Corporation, The: *See—*
Carp, Ralph W.; Weissler, Harold E., II; and Kudlaty, Paul R., 4,212,066, Cl. 364-431.000.
Marchak, Roman O.; Peterson, William A., Jr.; and Carp, Ralph W., 4,212,065, Cl. 364-431.000.
Wolber, William G., 4,211,119, Cl. 73-721.000.

Benefis Systems Limited: *See—*
Bensemann, Erle W., 4,212,004, Cl. 340-591.000.

Beneking, Heinz, to Licentia Patent-Verwaltungs-G.m.b.H. Field effect transistor with gate and drain electrodes on the side surface of a mesa. 4,212,022, Cl. 357-22.000.

Benjamin, Joel M., Jr.: *See—*
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,211,938, Cl. 307-233.00R.

Bennett, Matthew C., Jr.: *See—*
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,212,061, Cl. 364-414.000.

Bennett, Moreland P.; Cacalloro, Philip A.; and McCloy, Albert J., to General Electric Company. Header structure for a panel-type radiator and method of making said structure. 4,211,278, Cl. 165-130.000.

Bensemann, Erle W., to Benefis Systems Limited. Pressure drop detectors. 4,212,004, Cl. 340-591.000.

Benson, Nigel C.; Hughes, John M. F.; Kingslake, Denis; and Symonds, David G., to Imperial Chemical Industries Limited. Apparatus for feeding a moving web to a stenter apparatus. 4,210,987, Cl. 26-89.000.

Benton, Robert L., to General Motors Corporation. Plural lead ball nut screw actuator. 4,211,125, Cl. 74-424.80R.

Bentz, Gerard; Galey, Jean; and Devalois, Serge, to L'Air Liquide, Societe Anonyme pour l'Etude et L'Expoitation des Procedes Georges Claude. Method of centrifugally casting metal under an inert atmosphere. 4,211,269, Cl. 164-67.000.

Berger, Rudolf: *See—*
Fichtl, Karl; Berger, Rudolf; Durnfelder, Otto; and Pilz, Erich, 4,211,164, Cl. 100-145.000.

Berges, David A., to SmithKline Corporation. Phosphonoalkyl and esterified phosphonoalkyl substituted tetrazole thiols. 4,211,703, Cl. 548-112.000.

Bergstrom, Arthur E. Compensated blast joint for oil well production tubing. 4,211,440, Cl. 285-45.000.

Bergwerksverband GmbH: *See—*
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.

Berlin, Gary L., to Herrmidifier Company, Inc. Humidifier nozzle mounting. 4,211,735, Cl. 261-116.000.

Bernhardsson, Klas T. Y.: *See—*
Nyfeldt, Knud H.; and Bernhardsson, Klas T. Y., 4,211,659, Cl. 210-242.00S.

Bernhardt, Rainer, to Bockemuehl, Johannes. Tank for developing color films. 4,211,481, Cl. 354-312.000.

Berry, Milton E.; and Pariani, Ronald L., to Southwire Company. Method of controlling combustion in a metal melting furnace. 4,211,555, Cl. 75-72.000.

Bertelsen, Bruce I.: *See—*
Babinski, John P.; Bertelsen, Bruce I.; Raacke, Karl H.; and Sirgo, Valdeko H., 4,211,505, Cl. 406-19.000.

Bertin, Claude R.: *See—*
Balasubramanian, P. S.; Bertin, Claude R.; and Greenspan, Stephen B., 4,212,026, Cl. 357-41.000.

Bertolacini, Ralph J.; and Yu, Albert P., to Standard Oil Company (Indiana). Two-catalyst hydrocracking process. 4,211,634, Cl. 208-59.000.

Bess, James W., Sr.: *See—*
McCutchen, Hugh L.; and Bess, James W., Sr., 4,211,629, Cl. 204-252.000.

Bethlehem Steel Corporation: *See—*
Kwasnoski, Daniel; and Symons, Carl R., 4,211,608, Cl. 201-41.000.

Betz, Norman L.: *See—*
Lanter, Kent J.; Betz, Norman L.; and Williams, Danny L., 4,211,796, Cl. 426-2.000.

Bickford, Elwood D.; and Shurgan, Joel, to Duro-Test Corporation. Phantom fluorescent lamp with safety switch. 4,211,958, Cl. 315-312.000.

Bierbach, Herbert; Kohlen, Rudolf; and Hafke, Carl, to Metallgesellschaft Aktiengesellschaft. Producing pure gas of high calorific value from gasification of solid fuel. 4,211,539, Cl. 48-197.00R.

Bieser, Dennis W. D. Method and apparatus for internally seasoning meat prior to cooking. 4,211,160, Cl. 99-494.000.

Biethan, Gunter; and Kloeber, Peter, to Siemens Aktiengesellschaft. Duplex-transmitter receiver arrangement. 4,212,013, Cl. 370-30.000.

Biggs, Candice B.; Pyke, Thomas R.; and Wovcha, Merle G., to Upjohn Company, The. Process for microbial transformation of steroids. 4,211,841, Cl. 435-136.000.

Bijma, Jan: *See—*
Barten, Piet G. J.; and Bijma, Jan, 4,211,960, Cl. 315-368.000.

Bilynsky, John D.: *See*—
Puhak, Peter G.; Bilynsky, John D.; and Sorensen, Fred L., 4,211,465, Cl. 339-144.00T.
Biophysics Research & Consulting Corporation: *See*—
Boucher, Raymond M. G., 4,211,744, Cl. 422-20.000.
Biotronik Mess- und Therapiegerate GmbH & Co.: *See*—
Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, 4,211,235, Cl. 128-419.0PG.
Nagel, Joachim, 4,211,237, Cl. 128-698.000.
Birk, Edward W., to Crepaco, Inc. Case filling apparatus. 4,211,056, Cl. 53-543.000.
Bishop, Thomas D., to Deritend Engineering Company, The. Feeders for cardboard and like blanks. 4,211,398, Cl. 271-9.000.
Bison-Werke, Bahre & Greten GmbH & Co. KG: *See*—
Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,211,984, Cl. 331-97.000.
Bitterli, William W.: *See*—
Games, John E.; Rosien, Richard E.; and Bitterli, William W., 4,212,078, Cl. 364-900.000.
Bjorklund, Knut B., to AB Bonnierforetagen. Cancer associated polypeptide antigen compositions. 4,211,766, Cl. 424-88.000.
Blair, George C.: *See*—
Stahl, Edward L.; Sanders, Ellsworth E.; and Blair, George C., 4,211,327, Cl. 206-505.000.
Blake, Colin C.; and Payne, Ivan C., to Ciba-Geigy AG. Electrolytic recovery of silver from photographic bleach-fix baths. 4,211,630, Cl. 204-275.000.
Blake, Ralph K.; Morgan, James G.; and Woodward, David W., to Du Pont de Nemours, E. I., and Company. Photographic silver halide element with opaque backing layer. 4,211,837, Cl. 430-502.000.
Blanton, James R., to Dresser Industries, Inc. Variable orifice sleeve valve hydraulic jar tool. 4,211,293, Cl. 175-297.000.
Blaszczak, Larry C.: *See*—
Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., 4,211,702, Cl. 260-239.100.
Blount, David H. Process for the production of polyisocyanate-polyester-silicate plastic. 4,211,848, Cl. 521-154.000.
Blowsky, Frank C.; and Glickman, Kenneth B. Telescoping physical exercising device. 4,211,404, Cl. 272-141.000.
Blowsky, Frank C.; Glickman, Kenneth B.; and Iscoe, Alan D. Physical exercising device. 4,211,405, Cl. 272-141.000.
Bloyd, Jon A., to Aero-Metric General, Inc. Light indicating system having light emitting diodes and power reduction circuit. 4,211,956, Cl. 315-208.000.
BMI, Inc.: *See*—
Allison, Ralph E., 4,211,367, Cl. 239-226.000.
Bock, Erich; Braun, Erwin; and Wulfhorst, Burkhard, to Schubert & Salzer. Method and device for cleaning spinning rotors in open-end spinning mechanism. 4,211,063, Cl. 57-302.000.
Bockemuehl, Johannes: *See*—
Bernhardt, Rainer, 4,211,481, Cl. 354-312.000.
Bocsanczy, Janos; and Stalherm, Dieter, to Carl Still, Firma. Coke oven coal charging device. 4,211,611, Cl. 202-262.000.
Boeing Company, The: *See*—
Hofmann, George F., 4,211,917, Cl. 371-20.000.
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Mormann, Werner; Bofinger, Gerhard; and Wolfie, Wilfried, 4,211,232, Cl. 128-305.500.
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Semkina, Novella V.; Bokach, Galina S.; and Zinkovsky, Ivan V., 4,211,624, Cl. 204-195.00S.
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., to International Mobile Machines Incorporated. Tone detector. 4,211,938, Cl. 307-233.00R.
Bollongino, Norbert: *See*—
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Bolter, German; Helmle, Herbert; and Beck, Hans, to Hans Beck. Cut-and-weld device for superimposed foils advanced in the form of strips. 4,211,599, Cl. 156-494.000.
Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,211,283, Cl. 172-59.000.
Bonfils, Robert J. Picture frame retainer. 4,211,382, Cl. 248-467.000.
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., to Fiber Industries, Inc. Selfbonded nonwoven fabrics. 4,211,816, Cl. 428-296.000.
Boone, Sheila T.: *See*—
Burke, Roger W.; and Boone, Sheila T., 4,211,010, Cl. 33-11.000.
Bordini, Fosco; and Mauri, Luigi, to Moplefan S.p.A. Laminated olefinic polymer sheets for packaging. 4,211,811, Cl. 428-220.000.
Boreas, Willem J. L., to Sangamo Weston, Inc. Self contained filar suspended meter rotor. 4,211,972, Cl. 324-154.00R.
Borg-Warner Corporation: *See*—
Vandevier, Joseph E.; and Hocutt, Larry E., 4,211,625, Cl. 204-197.000.
Borman, Willem F. H., to General Electric Company. Copolyesters of polybutylene terephthalate. 4,211,689, Cl. 260-40.00R.
Borowski, Kurt: *See*—
Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, 4,211,478, Cl. 354-60.00L.
Bosenberg, Wolfram A.: *See*—
Kleinknecht, Hans P.; and Bosenberg, Wolfram A., 4,211,489, Cl. 356-400.000.
Boss, Raymond E., to United States of America, Navy. Hot gas motor. 4,211,148, Cl. 91-499.000.
Boucher, Raymond M. G., to Biophysics Research & Consulting Corporation. Process for ultrasonic pasteurization. 4,211,744, Cl. 422-20.000.
Bourset, Claude; and Lenne, William, to Essilor International (Cie Generale d'Optique). Molding assembly for casting soft contact lenses. 4,211,384, Cl. 249-160.000.
Bower, Terry F.: *See*—
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., 4,211,270, Cl. 164-83.000.
Boyd, Kenneth J., to Weber-Knapp Company. Hinge. 4,210,979, Cl. 16-147.000.
Boyd, Leroy. Refuse container sprayer. 4,211,745, Cl. 422-28.000.
Boyd, Stuart G.: *See*—
Steward, Raymond G.; Boyd, Stuart G.; and Civardi, Frank P., 4,211,590, Cl. 156-79.000.
Braconnier, Daniel; Joly, Jean; and Renault, Michele, to Rhone-Poulenc-Textile. Openwork textile structure and process for manufacture thereof. 4,211,812, Cl. 428-224.000.
Bradley, Richard L. Rifle gun barrel. 4,211,146, Cl. 89-16.000.
Bradt, Rexford H., to Jeffers, Albert L., a part interest. Process for forming and twisting fibers. 4,211,736, Cl. 264-8.000.
Braid, Milton, to Mobil Oil Corporation. Alkali metal containing transition metal complexes of thiobis (alkylphenols) as stabilizers for various organic media. 4,211,663, Cl. 252-42.700.
Braun, David B.; and Drap, Stephen, to Union Carbide Corporation. Poly(ethylene oxide) compositions. 4,211,681, Cl. 260-29.20R.
Braun, Erwin: *See*—
Bock, Erich; Braun, Erwin; and Wulfhorst, Burkhard, 4,211,063, Cl. 57-302.000.
Braun, Raymond J. Solar refrigeration system. 4,211,212, Cl. 126-439.000.
Braverman, Milton. Extender and header card for medicinal dispensing device. 4,211,329, Cl. 206-534.000.
Bredon Hydraulics Limited: *See*—
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Brenner, Margaret A.: *See*—
Brenner, Robert, 4,211,306, Cl. 182-76.000.
Brenner, Robert, to Brenner, Robert; and Brenner, Margaret A. Emergency building escape ladder. 4,211,306, Cl. 182-76.000.
Bresson, Clarence R.; and Thornberry, William E., to Phillips Petroleum Company. Gauge. 4,211,013, Cl. 33-147.00R.
Bridges, Barry A.: *See*—
Crescenzi, Donald; and Bridges, Barry A., 4,211,322, Cl. 206-44.00R.
Bridgestone Tire Company Limited: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,211,901, Cl. 200-83.00B.
Watabe, Yoji; Fujii, Yoshihiko; Anzai, Shiro; and Furukawa, Junji, 4,211,676, Cl. 260-2.300.
Briggs, Martin H. Structural spanning member. 4,211,047, Cl. 52-522.000.
Brisken, Axel F.; and Smith, Lowell S., to General Electric Company. Wear plate for piezoelectric ultrasonic transducer arrays. 4,211,949, Cl. 310-322.000.
Brisken, Axel F.: *See*—
Smith, Lowell S.; and Brisken, Axel F., 4,211,948, Cl. 310-322.000.
Bristol, Robert D. Internal combustion engine with free floating auxiliary piston. 4,211,082, Cl. 60-605.000.
Brizzolara, Donald F., to Du Pont de Nemours, E. I., and Company. Polyisocyanate compositions. 4,211,804, Cl. 427-377.000.
Brock, James D.; and Mize, Erbie G., to Astec, Industries, Inc. Drum mix asphalt plant with fiber filter dust collector. 4,211,490, Cl. 366-11.000.
Brooks, James C., Jr. Compensating trolling fin. 4,211,180, Cl. 114-144.00R.
Brothers, Jack, to United States of America, Army. Sub projectile or flechette launch system. 4,211,169, Cl. 102-67.000.
Brown, Douglas B.; and Bender, Robert. Apparatus for discharge of pressure cooked particulate or fibrous material. 4,211,163, Cl. 100-145.000.
Brown, Earle S., Jr.: *See*—
Walker, Wellington E.; Bryant, David R.; and Brown, Earle S., Jr., 4,211,719, Cl. 260-449.00L.
Brown, Glen. Practice putting green. 4,211,417, Cl. 273-176.00H.
Brown, Marvin R.: *See*—
Rivier, Jean E. F.; Brown, Marvin R.; and Vale, Wylie W., Jr., 4,211,693, Cl. 260-112.50S.
Brown, William R., to FMC Corporation. Vibrator with eccentric weights. 4,211,121, Cl. 74-87.000.
Bruderhaus Maschinen GmbH: *See*—
Schill, Gottlob, 4,211,165, Cl. 100-162.00R.
Bruel & Kjaer A/S: *See*—
Jensen, Joergen, 4,211,951, Cl. 310-329.000.
Brumfield, Robert C. Surface treatment for blood dialysis cartridges. 4,211,602, Cl. 156-644.000.
Brummel, Allan J.; Hodur, Neil R.; and Synkoski, Richard, to Brummel, Allan J. Contact lenses with angular orientation and stabilization. 4,211,476, Cl. 351-160.00R.
Brunner, Kunz: *See*—
Muschelknautz, Edgar; Herold, Heiko; Brunner, Kunz; and Horstmann, Walter, 4,211,604, Cl. 159-4.00D.
Bryant, David R.: *See*—
Walker, Wellington E.; Bryant, David R.; and Brown, Earle S., Jr., 4,211,719, Cl. 260-449.00L.
Bryant Grinder Corporation: *See*—
Halvorsen, James V., 4,211,425, Cl. 279-46.00R.

Mitchell, William A.; and Clark, John S., 4,211,454, Cl. 308-26.000.
BSB Aktiengesellschaft fur Mechanische Beschriftung und Dekoration: *See*—
Barta, Franz, 4,211,809, Cl. 428-201.000.
Barta, Franz, 4,211,810, Cl. 428-201.000.
Bublitz, Robert F., to Reynolds Metals Company. Container closure structure. 4,211,338, Cl. 220-359.000.
Buck, George S., Jr.; and Weyker, R. G., to Fiberlok, Inc. Bonded laminated structure and method for producing such. 4,211,817, Cl. 428-310.000.
Buckle, Derek R.; and Smith, Harry, to Beecham Group Limited. Indanediones. 4,211,791, Cl. 424-304.000.
Buckner, John G.; Lineberry, Cletus E.; and Harris, Jimmy W. Method and apparatus for handling and stacking brick. 4,211,130, Cl. 83-23.000.
Budd Company, The: *See*—
Eggert, Walter S., Jr., 4,211,173, Cl. 105-402.000.
McMullen, John C., 4,211,311, Cl. 188-209.000.
Buhrer, Carl F., to GTE Laboratories Incorporated. Ceramic compositions and articles prepared therefrom. 4,211,758, Cl. 423-263.000.
Bundy, Gordon L., to Upjohn Company, The. 9-Deoxy-9α,6-nitrilo or 6,9α-imino-17,18-didehydro-PGF compounds. 4,211,706, Cl. 260-326.270.
Bunker Ramo Corporation: *See*—
Holt, Harley R., 4,210,997, Cl. 29-566.300.
White, William G.; and Johnson, Verle D., 4,211,001, Cl. 29-747.000.
Burgess, John D.; and Jacuzzi, Virgil J., to Jacuzzi Bros., Incorporated. Whirlpool bath. 4,211,216, Cl. 128-66.000.
Burke, Roger W.; and Boone, Sheila T. Multiple-curved fashion design tool. 4,211,010, Cl. 33-11.000.
Burnier, Pierre H., to BBC Brown Boveri & Cie. Device for maintaining a vacuum in a compartment of a rotating member. 4,211,087, Cl. 62-55.500.
Burris, Michael V. Asphalt-sulfur emulsion composition. 4,211,575, Cl. 106-274.000.
Burroughs Corporation: *See*—
Costello, Matthew J.; and Gallagher, Norman K., 4,211,493, Cl. 400-121.000.
Butler, James L. Plastic tube. 4,211,259, Cl. 138-109.000.
Butts, Lawrence D.; and Kambic, Raymond V., to Folger Adam Co., Division of Telkee, Inc., a part interest. Electric strike. 4,211,443, Cl. 292-341.160.
C.I. Kasei Company Limited: *See*—
Sasayama, Hiroharu, 4,211,851, Cl. 525-108.000.
C. van der Lely N.V.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,211,283, Cl. 172-59.000.
Cacalloro, Philip A.: *See*—
Bennett, Moreland P.; Cacalloro, Philip A.; and McCloy, Albert J., 4,211,278, Cl. 165-130.000.
Caco, Edward S.: *See*—
Halaby, Sami A.; and Caco, Edward S., 4,211,006, Cl. 30-346.550.
Cairns, Hugh; and Payne, Anthony R., to Fisons Limited. Compounds. 4,211,788, Cl. 424-283.000.
Cakebread, William A.; and Pryke, Graham R., to B & A Engineering Company Ltd. Crane load alarm with compensation for direction of rope movement. 4,212,006, Cl. 340-685.000.
California Institute of Technology: *See*—
Yariv, Amnon; Margalit, Shlomo; and Lee, Chien-Ping, 4,212,020, Cl. 357-17.000.
California Medical Developments, Inc.: *See*—
Olsen, C. Eric, 4,211,323, Cl. 206-210.000.
Camardella, Giuseppe, to Tekma Kinomat S.p.A. Automatic welding of resistance wires on resistors terminals. 4,211,913, Cl. 219-56.220.
Cambrian Engineering Group Limited, The: *See*—
McGowan, Raymond J., 4,211,610, Cl. 202-177.000.
Campagnie Industrielle des Piles Electriques "Cipel": *See*—
Chevet, Robert, 4,211,830, Cl. 429-27.000.
Campbell, June H. Insulated lunch bag. 4,211,091, Cl. 62-372.000.
Canadian International Paper Company: *See*—
Saxton, William R.; and Lawford, William H., 4,211,605, Cl. 162-64.000.
Cannella, Vincent D.: *See*—
Izu, Masatsugu; and Cannella, Vincent D., 4,211,838, Cl. 430-502.000.
Cantaloupe, Francis A.; Colegrove, Robert W.; Megles, John E., Jr.; and Rittler, Hermann L., to Corning Glass Works. Brown glass-ceramic articles. 4,211,820, Cl. 428-410.000.
Cante, Charles J.; Downhour, Russell; Randall, Lee P.; and Morgan, Jeffrey D., to General Foods Corporation. Dry dog food of improved palatability. 4,211,797, Cl. 426-2.000.
Carey, Wayne C. Method of making a cooking vessel release material. 4,211,802, Cl. 426-609.000.
Carl Still, Firma: *See*—
Bocsanczy, Janos; and Stalherm, Dieter, 4,211,611, Cl. 202-262.000.
Carp, Ralph W.; Weissler, Harold E., II; and Kudlaty, Paul R., to Bendix Corporation, The. Hybrid electronic control unit for fuel management systems. 4,212,066, Cl. 364-431.000.
Carp, Ralph W.: *See*—
Marchak, Roman O.; Peterson, William A., Jr.; and Carp, Ralph W., 4,212,065, Cl. 364-431.000.
Carr, Norman L.; Schleppy, Ronald, Jr.; and Shah, Yatish T., to Gulf Research and Development Company. Coal liquefaction process employing multiple recycle streams. 4,211,631, Cl. 208-8.0LE.
Carrier Corporation: *See*—
Geary, Carl H., Jr., 4,211,932, Cl. 290-52.000.
Carroll, Kevin T. Game and exercising device, method of exercising, and method of playing a game. 4,211,402, Cl. 272-93.000.
Cassidy, Joseph C., to Energy Kinematics, Inc. Hybrid hydrostatic-pneumatic power generation system. 4,211,077, Cl. 60-398.000.
Castleberry, Donald E., to General Electric Company. Illuminator for reflective dichroic liquid crystal displays. 4,212,048, Cl. 362-19.000.
Catalucci, Enrico, to Lonza, Ltd. Process for the production of p-(N-methyl)-aminobenzoyl-L-glutamic acid. 4,211,883, Cl. 562-433.000.
Cater, Allen W., to CRS Co. Preparation of protein enriched yeast products devoid of carbohydrates. 4,211,798, Cl. 426-41.000.
Caterpillar Tractor Co.: *See*—
Grawey, Charles E., 4,211,592, Cl. 156-123.00R.
Kranc, Stanley J., 4,211,520, Cl. 417-494.000.
Lockhart, David A., 4,211,205, Cl. 123-193.0CH.
Cel-U-Dex, Inc.: *See*—
Chamberlin, Coleman R., 4,211,805, Cl. 428-40.000.
Centre Technique de l'Industrie Horiogere "Ceterhor" Laboratoire d'Electrochimie-Faculte des Sciences et des Techniques: *See*—
Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, 4,211,475, Cl. 350-357.000.
CGR Medical Corporation: *See*—
Hellstrom, Melbourne J.; Perlin, Allen I.; and Kutlik, Edward, 4,211,927, Cl. 250-445.00T.
Chaffin, Richard, to Clevepak Corporation. Automatic multicell carton. 4,211,359, Cl. 229-28.00R.
Chambard, Carol K. Assemblable and disassemblable lamp shade. 4,212,052, Cl. 362-352.000.
Chamberlin, Coleman R., to Cel-U-Dex, Inc. Self-adhesive labeling article. 4,211,805, Cl. 428-40.000.
Chambers, Albert, to Fisons Limited. Compositions comprising a compound having sodium cromoglycate activity and aminosalicylic acid. 4,211,777, Cl. 424-232.000.
Chambers, Doyle M.: *See*—
Steelman, Carrol D.; and Chambers, Doyle M., 4,211,778, Cl. 424-244.000.
Champion International Corporation: *See*—
Lillibridge, Harold R., 4,210,977, Cl. 15-306.00R.
Scott, Raymond G.; and Wysocki, Lawrence S., 4,211,360, Cl. 229-43.000.
Chandler, Curtis S., to AMP Incorporated. Metal strain relief clamp. 4,211,463, Cl. 339-103.00M.
Chaney, Robert F.; and Connell, Gene N., to Quad C Corporation. Covered mixing machine, or the like, and method of loading the same. 4,211,491, Cl. 366-30.000.
Chang, Shih-:hih. Gas-liquid mixing process and apparatus. 4,211,733, Cl. 261-36.00R.
Chapman, Kenneth G., to Pfizer Inc. Process for the preparation of dustless quinoxaline-1,4-dioxide animal feed supplement premixes. 4,211,781, Cl. 424-250.000.
Chapman, Walter H.; Hiland, David E.; Knies, Erwin B.; and Oberlin, Robert E., to Du Pont de Nemours, E. I., and Company. Apparatus for connecting tow carts to a conveyor. 4,211,172, Cl. 104-172.0BT.
Chassin, Andre' : *See*—
Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, 4,211,795, Cl. 426-2.000.
Chattopadhyay, Ashok: *See*—
Rose, Selwyn H.; and Chattopadhyay, Ashok, 4,211,677, Cl. 260-13.000.
Chave & Earley, Inc.: *See*—
Perry, Gerald N., 4,211,661, Cl. 210-491.000.
Chekroun, Claude, to Societe d'Etude du Radant. Electronically controlled dielectric panel lens. 4,212,014, Cl. 343-754.000.
Chemische Werke Huls Aktiengesellschaft: *See*—
List, Ferdinand; Klos, Julius; and Alfs, Helmut, 4,211,506, Cl. 406-55.000.
Chen, Nai Y., to Mobil Oil Corporation. Catalytic conversion of hydrocarbons. 4,211,635, Cl. 208-93.000.
Chen, Robert I.: *See*—
Chu, Hing C.; Sahm, William H., III; and Chen, Robert I., 4,212,023, Cl. 357-19.000.
Chen, Thomas Y. C. Methods and apparatus for feeding liquid into apparatus having high pressure resistance. 4,211,188, Cl. 122-451.00R.
Cheng, Sheng-Hsiung. Automotive anti-choking device. 4,211,734, Cl. 261-39.00B.
Cherednik, Igor M.: *See*—
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.
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Valgin, Vasily D.; Vasilenko, Alexandr M.; Morozov, Anatoly Y.; and Chesnokov, Vadim D., 4,211,856, Cl. 528-141.000.
Chevet, Robert, to Saft Leclanche; and Campagnie Industrielle des Piles Electriques "Cipel". Air-depolarized primary cell. 4,211,830, Cl. 429-27.000.
Chikashige, Kiyoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. End plug fitting for an endoscope. 4,211,214, Cl. 128-4.000.
Chikul, Olga S.: *See*—
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.;

Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.
Chikul, Vitaly I.: *See*—
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Childers-Fowler Research and Development Company: *See*—
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Chisso Corporation: *See*—
Inukai, Takashi; Inoue, Hiromichi; and Sato, Hideo, 4,211,666, Cl. 252-299.000.
Kunimune, Kohichi; Inadomi, Seigo; and Yoshida, Satomi, 4,211,819, Cl. 428-374.000.
Ohtake, Nobumasa; Yoshizawa, Ryo; and Koga, Isao, 4,211,704, Cl. 260-319.100.
Choay S.A.: *See*—
Moreau, Robert C.; and Fournier, Jean-Paul, 4,211,776, Cl. 424-228.000.
Choi, Sam K.; and Lee, Kee D. Antistatic agents, synthesis and use thereof. 4,211,859, Cl. 528-275.000.
Chojnacki, Dennis A.: *See*—
Mayers, Richard R.; Huebner, Steven R.; and Chojnacki, Dennis A., 4,211,088, Cl. 62-64.000.
Chu, Hing C.; Sahm, William H., III; and Chen, Robert I., to General Electric Company. Bilateral phototransistor. 4,212,023, Cl. 357-19.000.
Chugoku Marine Paints Ltd.: *See*—
Matsuda, Sumio; and Kudara, Hajime, 4,211,566, Cl. 106-16.000.
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., to Gosudarstvenny Nauchno-Issledovatelsky Energetichesky Institut Imeni G.M. Krzhizhanovskogo. Method for heat processing of pulverized brown coal. 4,211,632, Cl. 208-8.00R.
Chukhanov, Zinovy Z.: *See*—
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.
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Ciba-Geigy AG: *See*—
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Ciba-Geigy Corporation: *See*—
Altermatt, Hans; and Wick, Arnold, 4,211,688, Cl. 260-40.00P.
Deiner, Hans, 4,211,815, Cl. 428-290.000.
Hurter, Rudolf, 4,211,698, Cl. 260-176.000.
Luttringer, Jean P., 4,211,527, Cl. 8-526.000.
Nachbur, Hermann; and Rohringer, Peter, 4,211,814, Cl. 428-265.000.
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Cihal, Jan: *See*—
Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, 4,211,895, Cl. 179-18.00J.
Cikalon Vliesstoffwerk GmbH: *See*—
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Cincinnati Milacron Inc.: *See*—
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Civardi, Frank P.; and Loew, Frederic C., to Milliken Research Corporation. Treated fabric structure. 4,211,806, Cl. 428-91.000.
Civardi, Frank P.: *See*—
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Clark Equipment Company: *See*—
Sturtz, Charles R., Jr., 4,211,256, Cl. 137-625.640.
Clark, John S.: *See*—
Mitchell, William A.; and Clark, John S., 4,211,454, Cl. 308-26.000.
Clark, Ronald L.; and Kreeger, John L., to United States of America, Navy. Converter for converting a high frequency video signal to a digital signal. 4,211,999, Cl. 340-347.0AD.
Clason, Frank L., to Towmotor Corporation. Interlock mechanism. 4,211,314, Cl. 192-4.00A.
Claytor, Gary L.: *See*—
Westbrook, Clifton W.; Parcell, Lloyd J.; Claytor, Gary L.; and Klock, Byron V., 4,211,646, Cl. 210-15.000.
Clevepak Corporation: *See*—
Chaffin, Richard, 4,211,359, Cl. 229-28.00R.
Cleversey, Gerald W.; Duncan, Robert J.; Medidge, George H., Jr.; and Fleming, Jean A., to USM Corporation. Electrical component testing system for component insertion machine. 4,212,075, Cl. 364-580.000.
Cloutier, Jean-Marie. Multipurpose tibial template. 4,211,228, Cl. 128-303.00R.
Coatu, Ovidiu. Portable barbecue grill. 4,211,159, Cl. 99-421.00V.
Cochrane, John J. Liquid treating system. 4,211,656, Cl. 210-149.000.
Coday, Jerry F. Precast concrete building module form. 4,211,043, Cl. 52-79.100.
Coffaro, Matthew; and Pelton, Ronald L. Weight lifting leg exercise device. 4,211,403, Cl. 272-134.000.
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Coppola, Aldo; and Coppola, Antonio, 4,211,245, Cl. 132-40.000.
Coin Controls Limited: *See*—
Bellis, Robert E., 4,211,317, Cl. 194-1.00D.
Cole, Michael, to Metals Research Limited. Crystal growth. 4,211,600, Cl. 156-608.000.
Cole-Parmer Instrument Company: *See*—
Hogan, Lawrence R., 4,211,519, Cl. 417-360.000.
Colegrove, Robert W.: *See*—
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Colgate-Palmolive Company: *See*—
Douglass, Miriam L., 4,211,871, Cl. 546-6.000.
Schaar, Charles H., 4,211,226, Cl. 128-287.000.
Weyn, Hendrik F., 4,211,341, Cl. 222-94.000.
Collado, Hugo. Sugarcane cultivator. 4,211,284, Cl. 172-151.000.
Colletti, John B.; and Howell, Forrest W., to TRW Inc. Power steering motor seal. 4,211,152, Cl. 92-168.000.
Collins, Walter W., to Jenkins Metal Corporation. Adaptable knife sheath. 4,211,003, Cl. 30-162.000.
Colt Industries Operating Corp.: *See*—
Zechlin, Richard, 4,211,195, Cl. 123-335.000.
Colver, Kenneth W.: *See*—
Cox, Michael D.; Hunt, Norman; and Colver, Kenneth W., 4,211,193, Cl. 123-352.000.
Commonwealth Scientific and Industrial Research Organization: *See*—
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Compagnie Generale d'Electricite: *See*—
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Le Goff, Denis, 4,211,474, Cl. 350-356.000.
Compagnie Generale des Etablissements Michelin: *See*—
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Compagnie Internationale pour l'Informatique: *See*—
Lazzari, Jean-Pierre; and Helle, Michel, 4,212,041, Cl. 360-113.000.
Plotto, Michel, 4,212,044, Cl. 360-103.000.
Ugon, Michel, 4,211,919, Cl. 235-487.000.
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Pidgeon, Howard H. J., 4,211,522, Cl. 418-99.000.
Computer Peripherals, Inc.: *See*—
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Condec Corporation: *See*—
Phipps, Arthur L., 4,211,739, Cl. 264-51.000.
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Conners, John P., to Giddings & Lewis, Inc. Digital computer structure providing arithmetic and boolean logic operations, the latter controlling the former. 4,212,076, Cl. 364-706.000.
Conoco, Inc.: *See*—
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Consortium fur Elektrochemische Industrie, GmbH: *See*—
Marquardt, Klaus; and Kreuzer, Franz-Heinrich, 4,211,729, Cl. 525-106.000.
Consumer Promotions, Inc.: *See*—
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Container Corporation of America: *See*—
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Container Equipment Corporation: *See*—
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Cooper, Frank W., Jr., to Westinghouse Electric Corp. Hydraulic expansion swaging of tubes in tubesheet. 4,210,991, Cl. 29-421.00R.
Copal Company Limited: *See*—
Shimizu, Munetaka; and Takeda, Yoshimasa, 4,211,498, Cl. 400-621.000.
Coppola, Aldo; and Coppola, Antonio, to Coiffeurs i Coppola, di Aldo e Antonio Coppola, s.n.c. Hair-waving device. 4,211,245, Cl. 132-40.000.
Coppola, Antonio: *See*—
Coppola, Aldo; and Coppola, Antonio, 4,211,245, Cl. 132-40.000.
Cordis Dow Corp.: *See*—
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Corning Glass Works: *See*—
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Corse, Louis G., to Machines Chambon. Inking device for printing with greasy ink. 4,211,167, Cl. 101-148.000.
Costello, Alan T.: *See*—
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Costello, Matthew J.; and Gallagher, Norman K., to Burroughs Corporation. Impact printing apparatus. 4,211,493, Cl. 400-121.000.
Cote, Robert J. Musical instrument. 4,211,143, Cl. 84-402.000.
Cotter, Byron R., to Hooker Chemicals & Plastics Corp. Process for the preparation of aromatic nitriles. 4,211,721, Cl. 260-465.00G.
Coulombeau, Alain, to Compagnie Generale des Etablissements Michelin. Process for assembling a porous membrane on a support and assembly produced in this manner. 4,211,829, Cl. 429-27.000.

Cowher, Melvyn E.; and Sedgwick, Thomas O., to International Business Machines Corporation. CVD Growth of magnetic oxide films having growth induced anisotropy. 4,211,803, Cl. 427-128.000.

Cox, Michael D.; Hunt, Norman; and Colver, Kenneth W., to Associated Engineering Limited. Speed regulating systems. 4,211,193, Cl. 123-352.000.

Crane, Walton B., to Industrial Designs and Services. Lug box having cored-out plastic end walls. 4,211,358, Cl. 229-23.00C.

Crepaco, Inc.: *See*—
Birk, Edward W., 4,211,056, Cl. 53-543.000.

Crepin, Roger, to Thomson-Brandt. Steering arrangement for projectiles of the missile kind, and projectiles fitted with this arrangement. 4,211,378, Cl. 244-3.220.

Crescenzi, Donald; and Bridges, Barry A., to Leigh Products, Inc. Self-joined interlocking container. 4,211,322, Cl. 206-44.00R.

Cretin, Michel. Safety pyramid toy spindle. 4,211,029, Cl. 46-17.000.

Cross, Peter S.; and Schmidt, Ronald V., to Bell Telephone Laboratories, Incorporated. Optically-controlled two-channel integrated optical switch. 4,211,467, Cl. 350-96.140.

Cross, Robert M. Log splitter. 4,211,264, Cl. 144-193.00D.

CRS Co.: *See*—
Cater, Allen W., 4,211,798, Cl. 426-41.000.

Crummer, Robert R.: *See*—
Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,211,692, Cl. 260-45.70P.

Cryomedics, Inc.: *See*—
Rzasa, Ronald P., 4,211,231, Cl. 128-303.100.

CSELT—Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See*—
Tamburelli, Giovanni, 4,211,929, Cl. 250-55.000.

Cunard, Joel C., to Hedstrom Co. Swing having electrically rewound spring motor drive. 4,211,401, Cl. 272-86.000.

Cunningham, Hugh, to PPG Industries, Inc. Permionic membrane electrolytic cell. 4,211,627, Cl. 204-252.000.

Cure, Omer P. I., to Electro-Nite Co. Molten metal sampling device. 4,211,117, Cl. 73-425.40R.

Cuvelier, Georges, to Dollfus-Mieg & Cie. Solutions of sublimable dyes for the preparation of special inks for felt tip markers or pens. 4,211,528, Cl. 8-471.000.

Cvacho, Daniel S. Sealing process for underground walls. 4,211,050, Cl. 52-742.000.

Cyborex Laboratories, Inc.: *See*—
Hedges, Walter P.; and Sullivan, C. Gardner, II, 4,211,933, Cl. 307-35.000.

Czarnota, John J. Vehicle tire traction strip. 4,211,366, Cl. 238-14.000.

Daimler-Benz Aktiengesellschaft: *See*—
Hafner, Gunther, 4,211,202, Cl. 123-457.000.
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, 4,211,831, Cl. 429-78.000.

Dalitz, Shirley R. Planter basket. 4,211,036, Cl. 47-66.000.

Danilov, Leonid I.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Danilov, Leonid I.; and Pinsky, Gennady I., 4,211,101, Cl. 72-247.000.

Dankert, Gerhard: *See*—
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,211,869, Cl. 544-334.000.

Darbo, Rolf E., to Portable Cookery, Inc. Portable cooking grill. 4,211,206, Cl. 126-9.00R.

Das, Anup K.: *See*—
Emblem, Harold G.; Das, Anup K.; and Jones, Kenneth, 4,211,717, Cl. 556-470.000.

Das, Manik L., to Sigma Chemical Company. Colorimetric cholesterol assay. 4,211,531, Cl. 23-230.00B.

Data Machines International, Inc.: *See*—
Naylor, James E., 4,211,496, Cl. 400-124.000.

Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., to Avco Everett Research Laboratory, Inc. High energy electron beam driven laser. 4,211,983, Cl. 331-94.5PE.

Davies, Barrie L.: *See*—
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., 4,211,816, Cl. 428-296.000.

Davis, Douglas H., to PPG Industries, Inc. Storable glass batch composition. 4,211,568, Cl. 106-52.000.

Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, to Plessey Canada Ltd. Electronic telephone system with time division multiplexed signalling. 4,211,895, Cl. 179-18.00J.

Dayco Corporation: *See*—
Meadows, Roger D., 4,211,457, Cl. 339-15.000.

Dean, John J.; and Wetzig, Lloyd M. Fuel pellets and process for producing fuel pellets from botanical materials. 4,211,740, Cl. 264-68.000.

Deavenport, Joe E.; and Roorda, John W., to Westek Corporation. Touch-control adapter for electric lamps. 4,211,959, Cl. 315-362.000.

Decaux, Jean-Claude. Sanitary unit. 4,210,973, Cl. 4-420.000.

Decoene, Frans J. G. C., to Sperry Corporation. Row crop attachment. 4,211,059, Cl. 56-94.000.

Deere & Company: *See*—
Saele, Arvid H.; and Johannsen, Donald O., 4,211,079, Cl. 60-433.000.

Dehn, Rudolph A., to General Electric Company. Microwave directional coupler and detector module. 4,211,911, Cl. 219-10.55F.

Dehring, James C.: *See*—
Sleeter, Michael R.; and Dehring, James C., 4,211,107, Cl. 73-49.600.

Deiner, Hans, to Ciba-Geigy Corporation. Waterproofing of textiles. 4,211,815, Cl. 428-290.000.

Del Mar Avionics: *See*—
Shu, Stephen K.; and Squires, W. David, 4,211,238, Cl. 128-700.000.

de Recourt Martyn, Elizabeth: *See*—
Matthews, Carl; and de Recourt Martyn, Elizabeth, 4,211,302, Cl. 181-248.000.
Matthews, Carl; and de Recourt Martyn, Elizabeth, 4,211,303, Cl. 181-248.000.
Matthews, Carl; and de Recourt Martyn, Elizabeth, 4,211,304, Cl. 181-248.000.
Matthews, Carl; and de Recourt Martyn, Elizabeth, 4,211,305, Cl. 181-248.000.

Deritend Engineering Company, The: *See*—
Bishop, Thomas D., 4,211,398, Cl. 271-9.000.

Desai, Kishor A., to American Color & Chemical Corporation. Azoanilino-toluene sulfonamidoalkyleneamine cationic dyes for paper. 4,211,697, Cl. 260-158.000.

De Santis, Richard. Adjustable holder for molding dentures. 4,211,392, Cl. 269-75.000.

DeSoto, Inc.: *See*—
Rose, Selwyn H.; and Chattopadhyay, Ashok, 4,211,677, Cl. 260-13.000.

Desplanches, Gerard; and Leboucq, Jacques, to Compagnie Generale d'Electricite. Method of manufacturing beta alkaline alumina parts. 4,211,570, Cl. 106-65.000.

Deutsch Company Electronic Components Division, The: *See*—
Holzman, Melvyn A., 4,211,469, Cl. 350-96.160.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Harmonic formant filter for an electronic musical instrument. 4,211,138, Cl. 84-1.010.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See*—
Lindner, Friedrich, 4,211,208, Cl. 126-400.000.
Twardy, Harald; and Lo, Roger, 4,211,072, Cl. 60-203.000.

Devalois, Serge: *See*—
Bentz, Gerard; Galey, Jean; and Devalois, Serge, 4,211,269, Cl. 164-67.000.

Deverell, Harry E., to Allegheny Ludlum Steel Corporation. Controlled weld area grinding to prevent the initiation of intergranular corrosion. 4,211,042, Cl. 51-281.00R.

Devlin, Charles L.; and Eichelberger, Charles W., to General Electric Company. Shared memory multi-microprocessor computer system. 4,212,057, Cl. 364-200.000.

DeVoid, Robert R.; and Hodson, William A. Apparatus and procedure for testing prerequisite skills for reading by use of a dynamic line pattern. 4,211,018, Cl. 35-35.00R.

Deweck, Jean: *See*—
Van Hecke, Michel C. F.; and Deweck, Jean, 4,211,754, Cl. 423-62.000.

Diamond Shamrock Corporation: *See*—
McCutchen, Hugh L.; and Bess, James W., Sr., 4,211,629, Cl. 204-252.000.

Di Drusco, Giovanni; and Zaffagnini, Deoscaride, to Montedison S.p.A. Process for producing synthetic fibers for use in paper-making. 4,211,737, Cl. 264-12.000.

Diegel, Herbert F. Foil applicator for folding and applying adhesive backed foil to the edge of a work piece. 4,211,598, Cl. 156-468.000.

Diesel Kiki Co., Ltd.: *See*—
Kobayashi, Masayoshi, 4,211,203, Cl. 123-406.000.

Dieterich, Dieter, to Bayer Aktiengesellschaft. Polyhydroxy compounds containing urethane aryl sulfonic acid hydroxyalkyl ester groups. 4,211,850, Cl. 521-164.000.

Dieterich, Dieter: *See*—
Wenzel, Wolfgang; and Dieterich, Dieter, 4,211,683, Cl. 260-29.40R.

Dietrich, Otto E. Wear and alignment sleeve for power tool. 4,211,509, Cl. 408-35.000.

Digby, Dennis: *See*—
Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, 4,211,235, Cl. 128-419.0PG.

Diggs, Richard E. Apparatus for desalinating water. 4,211,609, Cl. 202-176.000.

Dill, Herbert C.; and Scales, Stanley R., to Hughes Tool Company. Earth boring tool with improved inserts. 4,211,508, Cl. 407-120.000.

Dittrich, Werner; Josten, Walter; Nestler, Heinz; and Schnippering, Friedhelm, to Dynamit Nobel Aktiengesellschaft. Process for the manufacture of refractory ceramic products. 4,211,567, Cl. 106-38.350.

Diver's Exchange, Inc.: *See*—
O'Neill, Wilbur J., 4,211,220, Cl. 128-201.270.

DiVincenzo, Joseph. Car floor tray. 4,211,447, Cl. 296-1.00F.

Dixon, David R.; Lydiate, Jack; and Lubbock, Frederick J., to ICI Australia Limited; and Commonwealth Scientific and Industrial Research Organization. Process for making composite magnetic material. 4,211,664, Cl. 252-62.540.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Trenkler, Werner, 4,212,050, Cl. 362-65.000.

Dodds, Curtis E.: *See*—
Schmitz, Lawrence S.; Dodds, Curtis E.; and Whipple, John, 4,211,065, Cl. 368-47.000.

Dolch, Gernot, to Mecano-Simmonds GmbH. Blind rivet. 4,211,145, Cl. 85-72.000.

Dollfus-Mieg & Cie: *See*—
Cuvelier, Georges, 4,211,528, Cl. 8-471.000.

Donaldson Company, Inc.: *See*—
Tokar, Joseph C.; and Janezich, Frank A., 4,211,543, Cl. 55-485.000.

D'Oporto, Tito R.; and Chun, Delo K. K., to Ingersoll-Rand Company. Ratchet wrench reversing mechanism. 4,211,127, Cl. 81-63.000.

Doreau, Michel: *See*—
Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, 4,211,475, Cl. 350-357.000.

Doring, Fritz: *See*—
Beck, Gunther; Dankert, Gerhard; and Doring, Fritz, 4,211,869, Cl. 544-334.000.

Dorsch, Hans-Lothar: *See*—
Hermann, Karl H.; and Dorsch, Hans-Lothar, 4,211,716, Cl. 260-391.000.

Dortu, Pierre, to Travaux et Produits Routiers Societe a Responsabilite Limitee. Method and device for driving a compaction machine. 4,212,071, Cl. 364-505.000.

Dougherty, Robert S.; Hirsch, Walter; and March, Rene, to Massey-Ferguson Industries Limited. Combine harvester automatic table height control. 4,211,057, Cl. 56-10.200.

Douglass, Miriam L., to Colgate-Palmolive Company. Heavy metal derivatives of mercaptopyridine-1-oxide. 4,211,871, Cl. 546-6.000.

Dow Chemical Company, The: *See*—
Ioset, Robert M., 4,211,775, Cl. 424-225.000.
Kurfman, Virgil B.; and Gransden, Raymond E., Jr., 4,211,822, Cl. 428-412.000.
Markley, Lowell D.; and Norton, Elizabeth J., 4,211,549, Cl. 71-88.000.
Marshall, David L.; and Herndon, William C., 4,211,763, Cl. 424-1.000.
Martin, Charles W.; and Ward, Eldon L., 4,211,784, Cl. 424-267.000.
Pews, R. Garth; and Ash, Mezzie L., 4,211,873, Cl. 546-346.000.
Raley, Charles F., Jr., 4,211,853, Cl. 525-317.000.

Downhour, Russell: *See*—
Cante, Charles J.; Downhour, Russell; Randall, Lee P.; and Morgan, Jeffrey D., 4,211,797, Cl. 426-2.000.

Dragerwerk Aktiengesellschaft: *See*—
Schwanbom, Erik; Hartwig, Hans-Joachim; and Warnow, Detlef, 4,211,221, Cl. 128-204.260.

Drap, Stephen: *See*—
Braun, David B.; and Drap, Stephen, 4,211,681, Cl. 260-29.20R.

Dravo Corporation: *See*—
Saxon, Arthur F., 4,211,752, Cl. 422-268.000.

Dresser Industries, Inc.: *See*—
Blanton, James R., 4,211,293, Cl. 175-297.000.

Drewery, John O., to Marconi Company Limited, The; and Standard Telephones and Cables Limited. Processing pal color television signals. 4,212,028, Cl. 358-11.000.

Drucker, Gerhard: *See*—
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, 4,211,831, Cl. 429-78.000.

Du, Elbert. Pressure sensitive transfer media. 4,211,826, Cl. 428-497.000.

Du Pont of Canada Limited: *See*—
Oughton, Richard W., 4,211,695, Cl. 260-123.500.
Oughton, Richard W., 4,211,801, Cl. 426-430.000.

Dubreuil, Monique, heir: *See*—
Dubreuil, Robert, deceased; Ast, Orvo; and Pavilanis, Vytautas, 4,211,843, Cl. 435-2.000.

Dubreuil, Robert, deceased (by Dubreuil, Monique, heir); Ast, Orvo; and Pavilanis, Vytautas, to L'Institut Armand-Frappier. Strain of measles virus and process of producing the same. 4,211,843, Cl. 435-2.000.

Dunbar, Glenn G. Weight vehicle apparatus. 4,211,297, Cl. 180-24.020.

Duncan, Robert J.: *See*—
Cleversey, Gerald W.; Duncan, Robert J.; Medidge, George H., Jr.; and Fleming, Jean A., 4,212,075, Cl. 364-580.000.

Dunn, Wendell E., Jr. Process for beneficiating titaniferous ores. 4,211,755, Cl. 423-74.000.

Du Pont de Nemours, E. I., and Company: *See*—
Blake, Ralph K.; Morgan, James G.; and Woodward, David W., 4,211,837, Cl. 430-502.000.
Brizzolara, Donald F., 4,211,804, Cl. 427-377.000.
Chapman, Walter H.; Hiland, David E.; Knies, Erwin B.; and Oberlin, Robert E., 4,211,172, Cl. 104-172.0BT.
Erdman, John P., 4,211,868, Cl. 544-221.000.
FitzGerald, Emerson B.; and Meyer, Walter C., 4,211,691, Cl. 260-42.210.
Nichols, Lee H., III; and Smith, Edmund H., Jr., 4,211,132, Cl. 83-71.000.
Pechhold, Engelbert; and Robinson, Ivan M., 4,211,862, Cl. 528-405.000.
Plambeck, Louis, Jr., 4,211,561, Cl. 430-306.000.
Robinson, Ivan M., 4,211,854, Cl. 525-410.000.
Scribner, Richard M., 4,211,876, Cl. 548-367.000.
Smiley, Robert A., 4,211,722, Cl. 260-465.300.

Duranleau, Roger G.: *See*—
Lewellen, Philip C.; Gates, Walter C., Jr.; and Duranleau, Roger G., 4,211,673, Cl. 252-462.000.

Durnfelder, Otto: *See*—
Fichtl, Karl; Berger, Rudolf; Durnfelder, Otto; and Pilz, Erich, 4,211,164, Cl. 100-145.000.

Duro-Test Corporation: *See*—
Bickford, Elwood D.; and Shurgan, Joel, 4,211,958, Cl. 315-312.000.

Dworschak, Karl: *See*—
Friedl, Reiner; Dworschak, Karl; and Hornfeck, Werner, 4,211,365, Cl. 237-12.30C.

Dyal, Elton E., to Modular Controls Corporation. Normally closed pressure compensated flow control valve. 4,211,254, Cl. 137-596.120.

Dynamit Nobel Aktiengesellschaft: *See*—
aus der Funten, Helmut; and Vogt, Wilhelm, 4,211,711, Cl. 260-343.30R.
Dittrich, Werner; Josten, Walter; Nestler, Heinz; and Schnippering, Friedhelm, 4,211,567, Cl. 106-38.350.
Steffen, Klaus-Dieter, 4,211,710, Cl. 260-343.30R.
Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, 4,211,730, Cl. 260-45.75B.

E M I Limited: *See*—
Fairbairn, Ian A., 4,211,925, Cl. 250-445.00T.

E. R. Squibb & Sons, Inc.: *See*—
Rovnyak, George C., 4,211,786, Cl. 424-273.00P.

Eadie, Brian K. M.; and Parker, William H. C., to Eadie Bros. & Co. Limited. Card-clothing wire. 4,211,583, Cl. 148-6.350.

Eadie Bros. & Co. Limited: *See*—
Eadie, Brian K. M.; and Parker, William H. C., 4,211,583, Cl. 148-6.350.

Eakes, Marion L. Apparatus for improving the collection of gases into a suction orifice. 4,211,154, Cl. 98-115.0LH.

Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., to Exxon Research & Engineering Co. Process for the production of an intermediate Btu gas. 4,211,538, Cl. 48-197.00R.

Eakman, James M.; Marshall, Harry A.; and Kalina, Theodore, to Exxon Research & Engineering Co. Process for the production of a chemical synthesis gas from coal. 4,211,669, Cl. 252-373.000.

Eastman Kodak Company: *See*—
Wu, Tai-Wing, 4,211,844, Cl. 435-25.000.

Eckert, Joachim; and Spirk, Franz, to Siemens Aktiengesellschaft. Asynchronous electric machine. 4,211,946, Cl. 310-212.000.

Edwards, Ernest; and Jukes, Michael K., to International Telephone and Telegraph Corporation. Connector tool. 4,211,395, Cl. 269-254.00R.

Efimov, Viktor M.: *See*—
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Egger, Gerhard: *See*—
Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, 4,211,478, Cl. 354-60.00L.

Eggers, Philip E.: *See*—
Kortier, William E.; Mueller, John J.; and Eggers, Philip E., 4,211,889, Cl. 136-237.000.

Eggert, Walter S., Jr., to Budd Company, The. End construction for a railway car. 4,211,173, Cl. 105-402.000.

Eguchi, Chikahiko: *See*—
Nakamori, Shigeru; Yokozeki, Kenzo; Mitsugi, Koji; Eguchi, Chikahiko; and Iwagami, Hisao, 4,211,840, Cl. 435-107.000.

Eichelberger, Charles W.; and Andrejko, Edward S., to General Electric Company. Electronic speed error signal processing circuit. 4,211,931, Cl. 290-40.00A.

Eichelberger, Charles W.: *See*—
Devlin, Charles L.; and Eichelberger, Charles W., 4,212,057, Cl. 364-200.000.

Eigner, Erich, to Waagner-Biro Aktiengesellschaft. Tumbling mills. 4,211,369, Cl. 241-182.000.

Einem, Robert E.; Richards, Joseph A.; and Gassowski, Jerzy R., to International Telephone and Telegraph Corporation. Head for a mosaic printer. 4,211,495, Cl. 400-124.000.

Einstein, Harry, to Exxon Research & Engineering Co. Bipolar battery. 4,211,833, Cl. 429-149.000.

Ekman Engineering AG: *See*—
Ekman, Kjell R., 4,211,253, Cl. 137-594.000.

Ekman, Kjell R., to Ekman Engineering AG. Coupling device. 4,211,253, Cl. 137-594.000.

Eldar, Meir. Method and chart for organizing and producing colors. 4,211,016, Cl. 35-28.300.

Electric Power Research Institute, Inc.: *See*—
Pilat, Michael J.; Powell, Edward B., Jr.; and Thielke, John F., 4,211,116, Cl. 73-421.50A.

Electro-Nite Co.: *See*—
Cure, Omer P. I., 4,211,117, Cl. 73-425.40R.

Eli Lilly and Company: *See*—
Barnett, Charles J.; Emmick, Thomas L.; and Hoying, Richard C., 4,211,870, Cl. 544-336.000.
Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., 4,211,702, Cl. 260-239.100.

Ellis, Jeffrey R.: *See*—
Wagner, Herman B.; and Ellis, Jeffrey R., 4,211,572, Cl. 106-90.000.

Emblem, Harold G.; Das, Anup K.; and Jones, Kenneth, to Zirconal Processes Limited. Manufacture of alkyl silicates. 4,211,717, Cl. 556-470.000.

Emerson Electric Co.: *See*—
Woods, Donald M., 4,211,004, Cl. 30-276.000.
Woods, Donald M., 4,211,005, Cl. 30-276.000.

Emeury, Jean-Marie L.; and Girardon, Hubert H., to Societe Nationale des Poudres et Explosifs. Continuous process for the manufacture of dinitroglycolurile. 4,211,874, Cl. 548-304.000.

Emmick, Thomas L.: *See*—
Barnett, Charles J.; Emmick, Thomas L.; and Hoying, Richard C., 4,211,870, Cl. 544-336.000.
Energy Conversion Devices, Inc.: *See*—
Izu, Masatsugu; and Cannella, Vincent D., 4,211,838, Cl. 430-502.000.
Energy Kinematics, Inc.: *See*—
Cassidy, Joseph C., 4,211,077, Cl. 60-398.000.
Energy Modification, Inc.: *See*—
Gleim, William K. T., 4,211,633, Cl. 208-45.000.
Energy Sciences Inc.: *See*—
Nablo, Sam V., 4,211,622, Cl. 204-159.120.
Engebreth, Roald N. Device for protecting wine against excessive exposure to air. 4,211,115, Cl. 73-421.00B.
Entwistle, Ian D.; and Johnstone, Robert A. W., to Shell Oil Company. Reduction of carboxylic acid halides to aldehydes. 4,211,727, Cl. 568-437.000.
Eocom Corporation: *See*—
McGowan, Norman L., 4,211,399, Cl. 271-232.000.
Epper, Wolfgang: *See*—
Koppe, Eberhard; Schonteich, Peter; and Epper, Wolfgang, 4,211,653, Cl. 210-77.000.
Eppstein, Lee B.; Kroeger, James K.; and Lindblom, Kenneth A., to Photovolt Corporation. Endpoint drift correction for automatic titrations. 4,211,614, Cl. 204-1.00T.
Erben, Ludwig, to Trutzschler GmbH & Co. KG. Electronic pressure switch. 4,211,935, Cl. 307-118.000.
Erco Leuchten GmbH: *See*—
Seelbach, Heinz; and Eversberg, Gerhard, 4,211,460, Cl. 339-75.00M.
Erdman, John P., to Du Pont de Nemours, E. I., and Company. Process for making a fluoroelastomer gelling agent preparation of 1,3,5-tris-(3,3-difluoro-2-propenyl)-s-triazine-2,4,6-(1H,3H,5H)-trione. 4,211,868, Cl. 544-221.000.
Erwin Kampf GmbH & Co. Maschinenfabrik, Firma: *See*—
Wehde, Friedrich, 4,211,135, Cl. 83-499.000.
Essilor International (Cie Generale d'Optique): *See*—
Bourset, Claude; and Lenne, William, 4,211,384, Cl. 249-160.000.
Ethridge, Frank W. Removable step or shelf for ladder. 4,211,307, Cl. 182-121.000.
Etlin, Vladimir N. Means for biological treatment of water. 4,211,657, Cl. 210-195.400.
Eubank, Joseph P., Jr. Picture frame. 4,211,023, Cl. 40-155.000.
Euker, Charles A., Jr.: *See*—
Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., 4,211,538, Cl. 48-197.00R.
Euverard, Maynard R.: *See*—
Pulver, W. Clark; Euverard, Maynard R.; Heide, Henry A.; and Ziolkowski, Ronald P., 4,211,319, Cl. 198-432.000.
Evans, Robert F. Borehole angle control by gage corner removal effects. 4,211,292, Cl. 175-61.000.
Everest & Jennings, Inc.: *See*—
Motloch, Wallace M., 4,211,426, Cl. 280-87.02W.
Eversberg, Gerhard: *See*—
Seelbach, Heinz; and Eversberg, Gerhard, 4,211,460, Cl. 339-75.00M.
Ex-Cell-O Corporation: *See*—
Lisiecki, Robert E., 4,211,357, Cl. 229-17.00G.
Excor, Inc.: *See*—
Thorsell, Roland H.; and Pyle, Stoddard H., 4,211,134, Cl. 83-471.300.
Exxon Nuclear Company, Inc.: *See*—
Watt, George W.; and Baugh, Daniel W., Jr., 4,211,757, Cl. 423-251.000.
Exxon Production Research Company: *See*—
Mifsud, Joseph F., 4,211,301, Cl. 181-120.000.
Exxon Research & Engineering Co.: *See*—
Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., 4,211,538, Cl. 48-197.00R.
Eakman, James M.; Marshall, Harry A.; and Kalina, Theodore, 4,211,669, Cl. 252-373.000.
Einstein, Harry, 4,211,833, Cl. 429-149.000.
Feldman, Nicholas, 4,211,534, Cl. 44-62.000.
Gardner, Irwin J., 4,211,855, Cl. 525-344.000.
Muenker, Adolf H.; and Young, Archie R., II, 4,211,210, Cl. 126-438.000.
Fairbairn, Ian A., to E M I Limited. CT Scanner with anode scan monitor. 4,211,925, Cl. 250-445.00T.
Fancy, Richard E., to General Motors Corporation. Passive lap and shoulder belt system. 4,211,430, Cl. 280-802.000.
Fang, Frank F.; and Shih, Kwang K., to International Business Machines Corporation. Method of fabricating multicolor light emitting diode array utilizing stepped graded epitaxial layers. 4,211,586, Cl. 148-175.000.
Farris, William C. Energy conservation system for hot water heaters and storage tanks. 4,211,187, Cl. 122-20.00B.
Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, to Laboratoires Sarget. Benzopyran glycoside acetals and ketals. 4,211,772, Cl. 424-180.000.
Fedorov, Nikolai A.: *See*—
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.
Feldman, Nicholas, to Exxon Research & Engineering Co. Combination of ethylene polymer, polymer having alkyl side chains, and nitrogen containing compound to improve cold flow properties of distillate fuel oils. 4,211,534, Cl. 44-62.000.
Fenart, Jean-Claude, to Societe Anonyme Francaise du Ferodo. Cover assembly for a diaphragm spring clutch having diaphragm spring centering means independent and distinct from assembly means therefor. 4,211,315, Cl. 192-70.270.
Fengler, Werner H. Vehicle propulsion system by individual stepping motors from continuously-running engine-driven alternator and/or pulsating battery current. 4,211,930, Cl. 290-15.000.
Feniou, Claude: *See*—
Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, 4,211,772, Cl. 424-180.000.
Fenn, Cyril P.; and Thelwell, William H., to Fibreglass Limited. Cutting of corrugated material. 4,211,131, Cl. 83-56.000.
Fernandez, Alberto C., to Kinnard, Harry W. O. Pollution control system. 4,211,541, Cl. 55-68.000.
Ferrieu, Gilbert M. M., to Telecommunications Radioelectrique et Telephoniques T.R.T. Subscriber's circuit with a symmetrical amplifier. 4,211,896, Cl. 179-18.0FA.
Ferruti, Paolo; and Paoletti, Rodolfo. Novel prostaglandin precursors in polymeric form. 4,211,865, Cl. 536-48.000.
Fiber Industries, Inc.: *See*—
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., 4,211,816, Cl. 428-296.000.
Fiberlok, Inc.: *See*—
Buck, George S., Jr.; and Weyker, R. G., 4,211,817, Cl. 428-310.000.
Fibreglass Limited: *See*—
Fenn, Cyril P.; and Thelwell, William H., 4,211,131, Cl. 83-56.000.
Fichtl, Karl; Berger, Rudolf; Durnfelder, Otto; and Pilz, Erich, to Industrie-Werke Karlsruhe-Augsburg Aktiengesellschaft. Rotary drum-type collecting vessel with a raking and pressing screw. 4,211,164, Cl. 100-145.000.
Fields, Joseph E.: *See*—
Johnson, John H.; and Fields, Joseph E., 4,211,765, Cl. 424-78.000.
Finch, Jack N.; and Poska, Forrest L., to Phillips Petroleum Company. Methanation process. 4,211,718, Cl. 260-449.00M.
Finta, Csaba: *See*—
Szabo, Imre Z.; Nagy, Kornel; and Finta, Csaba, 4,211,105, Cl. 73-11.000.
Fiorentzis, Michael: *See*—
Henle, Burkhard; Vukasovic, Ivica; and Fiorentzis, Michael, 4,211,934, Cl. 307-98.000.
Fischer, Artur. Arrangement for and a method of anchoring a mounting element in a hole of a support structure. 4,211,049, Cl. 52-704.000.
Fischer, Philipp-Josef; and Reier, Richard, to Siemens Aktiengesellschaft. Device for guiding the printer needles in a mosaic needle printer. 4,211,494, Cl. 400-124.000.
Fisher, Jack W.: *See*—
Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jack W., 4,211,702, Cl. 260-239.100.
Fisher, Joseph. Endotracheal tube introducer. 4,211,234, Cl. 128-200.260.
Fisher, Leslie G.; and Palmer, Bertram J., to GKN Transmissions Limited. Shaft and universal joint assembly. 4,211,589, Cl. 156-73.500.
Fishwick, Brian R.: *See*—
Baird, David B.; Costello, Alan T.; Fishwick, Brian R.; McClelland, Robert D.; and Smith, Peter, 4,211,696, Cl. 260-152.000.
Fisons Limited: *See*—
Cairns, Hugh; and Payne, Anthony R., 4,211,788, Cl. 424-283.000.
Chambers, Albert, 4,211,777, Cl. 424-232.000.
FitzGerald, Emerson B.; and Meyer, Walter C., to Du Pont de Nemours, E. I., and Company. Thermoplastic powder coating systems. 4,211,691, Cl. 260-42.210.
Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, to Bayer Aktiengesellschaft. Apparatus for determining the water content of isotropic materials. 4,211,970, Cl. 324-58.50C.
Flameless Furnaces Limited: *See*—
Pearce, Arnold P., 4,211,186, Cl. 122-4.00D.
Flanigen, Edith M.: *See*—
Grose, Robert W.; and Flanigen, Edith M., 4,211,760, Cl. 423-328.000.
Fleming, Jean A.: *See*—
Cleversey, Gerald W.; Duncan, Robert J.; Medidge, George H., Jr.; and Fleming, Jean A., 4,212,075, Cl. 364-580.000.
Fluid Device Corporation: *See*—
Richards, George B., 4,211,249, Cl. 137-393.000.
Fluor Corporation: *See*—
Netzer, David, 4,211,540, Cl. 48-202.000.
FMC Corporation: *See*—
Brown, William R., 4,211,121, Cl. 74-87.000.
Foam-Ply, Inc.: *See*—
Johanson, Ronald C.; and McDonald, Bill W., 4,211,385, Cl. 249-192.000.
Folger Adam Co., Division of Telkee, Inc.: *See*—
Butts, Lawrence D.; and Kambic, Raymond V., 4,211,443, Cl. 292-341.160.
Fordertechnik Streicher GmbH: *See*—
Streicher, Max, 4,211,521, Cl. 418-48.000.
Forsythe, Arthur M.; Anapol, James H.; and Reich, Zygmund, to Simmonds Precision Products, Inc. Performance advisory system. 4,212,064, Cl. 364-424.000.
Fort, Geza: *See*—
Seitz, Lamont J.; and Fort, Geza, 4,211,108, Cl. 73-141.0AB.

Fournier, Jean-Paul: *See*—
Moreau, Robert C.; and Fournier, Jean-Paul, 4,211,776, Cl. 424-228.000.

Fowler, Herbert, to Childers-Fowler Research and Development Company. Method of and apparatus for producing hydrogen and oxygen by photoelectrically-induced electrolysis. 4,211,620, Cl. 204-129.000.

Fox, Jack J.: *See*—
Lopez, Carlos; Watanabe, Kyoichi A.; Reichman, Uri; and Fox, Jack J., 4,211,773, Cl. 424-180.000.

Framberg, Norman S., to Abex Corporation. Air cylinder. 4,211,150, Cl. 92-119.000.

Francois, Andre' C.: *See*—
Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, 4,211,795, Cl. 426-2.000.

Franz, John E.; and Kaufman, Robert J., to Monsanto Company. Esters of N-phosphinothioylmethylglycine and herbicidal method. 4,211,548, Cl. 71-87.000.

Franz, John E.; and Kaufman, Robert J., to Monsanto Company. N-Carbobenzoxy-N-phosphinothioylmethylglycine. 4,211,732, Cl. 260-938.000.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH: *See*—
Theurer, Josef, 4,211,170, Cl. 104-2.000.

Freitag, Gunter; Krahl, Alfred; Ullmann, Gerhard; and Wenzel, Gunter, to Sigri Elektrographit Gesellschaft mit Beschrankter Haftung. Joining together shaped bodies of polytetrafluoroethylene. 4,211,594, Cl. 156-158.000.

Frey, Lawrence A.; Harrison, Robert E.; and McGriff, James E., to Timber Conversion, Inc. Resilient article stack binder. 4,211,389, Cl. 24-269.000.

Friedl, Reiner; Dworschak, Karl; and Hornfeck, Werner, to Webasto Werk W. Baier GmbH & Co. Motor vehicle auxiliary heater. 4,211,365, Cl. 237-12.30C.

Friedman, Alexander A.; and Tait, Scott J. Anaerobic method of treating high-strength waste-water. 4,211,647, Cl. 210-17.000.

Fries, John R.: *See*—
Toomey, Gerald P.; Grove, John L.; and Fries, John R., 4,211,211, Cl. 126-439.000.

Frisbee, Claude M., to J. I. Case Company. Adjustable blade stabilizer and controls. 4,211,282, Cl. 172-7.000.

Frykhult, Rune H.; and Rundqvist, Lars-Goran, to AB Celleco. Hydrocyclone separator. 4,211,643, Cl. 209-211.000.

Fuji Photo Film Co., Ltd.: *See*—
Ohnishi, Masahiro; Ohara, Yuji; and Oono, Hiroshi, 4,212,018, Cl. 346-76.00L.
Suzuki, Nobuo; Sashihara, Kenji; and Masuda, Takao, 4,211,839, Cl. 430-619.000.
Yoneyama, Masakazu; Mukunoki, Yasuo; Mikami, Takeshi; and Sasaki, Jun, 4,211,836, Cl. 430-449.000.

Fuji Xerox Co., Ltd.: *See*—
Tamai, Masayoshi, 4,212,017, Cl. 346-75.000.

Fujii, Yoshihiko: *See*—
Watabe, Yoji; Fujii, Yoshihiko; Anzai, Shiro; and Furukawa, Junji, 4,211,676, Cl. 260-2.300.

Fujikawa, Noboru: *See*—
Taguchi, Tadashi; Fujikawa, Noboru; Kohno, Mitsuo; Yoshitake, Katsumi; and Satake, Kunio, 4,211,560, Cl. 430-313.000.

Fujita, Masanori: *See*—
Oda, Hajime; Samejima, Toshihide; Matsumura, Toshio; Moritani, Nakanobu; and Fujita, Masanori, 4,211,067, Cl. 368-185.000.

Fukasawa, Katsumi: *See*—
Kitamura, Hiroyuki; Hosokawa, Yorio; and Fukasawa, Katsumi, 4,212,056, Cl. 363-96.000.

Fukuyama, Toshifumi; and Hattan, Hideaki, to Omron Tateisi Electronics Co. Fluid tight ultrasonically welded photoelectric device. 4,211,923, Cl. 250-239.000.

Furman, Anatoly V. Operational amplifier with switching error elimination. 4,211,939, Cl. 307-229.000.

Furman, Leonard: *See*—
Thomas, Charles W., Jr., 4,211,198, Cl. 123-592.000.

Furukawa, Haruki; Usami, Susumu; and Nakaho, Junichi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Webbing guide. 4,211,432, Cl. 280-808.000.

Furukawa, Junji: *See*—
Watabe, Yoji; Fujii, Yoshihiko; Anzai, Shiro; and Furukawa, Junji, 4,211,676, Cl. 260-2.300.

Furuya, Katusuke: *See*—
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, 4,211,052, Cl. 53-77.000.

G. W. Dahl Company, Inc.: *See*—
Getchell, Williams G.; and Lambert, Norman A., 4,211,387, Cl. 251-335.00B.

Gaertner, Van R., to Monsanto Company. N-Phosphonomethyliminodiacetonitrile and certain derivatives thereof. 4,211,547, Cl. 71-86.000.

Galey, Jean: *See*—
Bentz, Gerard; Galey, Jean; and Devalois, Serge, 4,211,269, Cl. 164-67.000.

Gallagher, Norman K.: *See*—
Costello, Matthew J.; and Gallagher, Norman K., 4,211,493, Cl. 400-121.000.

Gallagher, Stephen F. Inspiratory force adaptor. 4,211,240, Cl. 128-725.000.

Gallo, Mario, to Wirth, Gallo & Co. Method and a scale for manual or automatic weighing of objects of same nominal weight. 4,211,295, Cl. 177-185.000.

Gambino, Nate J. Wild goose and duck call. 4,211,031, Cl. 46-177.000.

Game Time, Inc.: *See*—
Ray, Sunnie, 4,211,400, Cl. 272-56.50R.

Games, John E.; Rosien, Richard E.; and Bitterli, William W., to United Technologies Corporation. Computer controlled facility management system (FMS). 4,212,078, Cl. 364-900.000.

Gardner, Denise: *See*—
Morrison, Howard J.; Gardner, Denise; and Schoenfield, Palmer J., 4,211,030, Cl. 46-67.000.

Gardner, Irwin J., to Exxon Research & Engineering Co. Catalytic dehydrohalogenation process for allylically halogenated unsaturated hydrocarbon polymers. 4,211,855, Cl. 525-344.000.

Garrison, Harold K., to Hesston Corporation. Folding tool beams with level equalizer therebetween. 4,211,287, Cl. 172-311.000.

Garwood, William E.; and Lee, Wooyoung, to Mobil Oil Corporation. Process for the treatment of olefinic gasoline. 4,211,640, Cl. 208-255.000.

Gaskill, David M., Jr., to Atlan-Tol Industries, Inc. Positioning means for limited rotation motor. 4,211,992, Cl. 335-222.000.

Gassowski, Jerzy R.: *See*—
Einem, Robert E.; Richards, Joseph A.; and Gassowski, Jerzy R., 4,211,495, Cl. 400-124.000.

Gates, Walter C., Jr.: *See*—
Lewellen, Philip C.; Gates, Walter C., Jr.; and Duranleau, Roger G., 4,211,673, Cl. 252-462.000.

Gaunt, Conrad L., to General Motors Corporation. Toughening of PVC-separator-enveloped battery plates. 4,210,998, Cl. 29-623.400.

Gavrovskaya, Ljudmila K.: *See*—
Grechishkin, Leonid L.; Gavrovskaya, Ljudmila K.; and Goldfarb, Vadim L., 4,211,764, Cl. 424-9.000.

Gay, Larry T. Method and apparatus for collecting and domestic use of solar heat. 4,211,209, Cl. 126-422.000.

Geary, Carl H., Jr., to Carrier Corporation. Power recovery system. 4,211,932, Cl. 290-52.000.

Gehmlich, Dietrich K.: *See*—
Raemer, Daniel B.; Gehmlich, Dietrich K.; Westenskow, Dwayne R.; and Johnson, Curtis C., deceased, 4,211,239, Cl. 128-716.000.

Gelbard, Robert B.; and Griffin, James R., to General Electric Company. Household refrigerator with air circulation and cooling arrangement. 4,211,090, Cl. 62-283.000.

Gen-Tech, Inc.: *See*—
Tawse, Ian S., 4,211,945, Cl. 310-112.000.

General Aviation Electronics, Inc.: *See*—
Henderson, Claude L., 4,212,067, Cl. 364-460.000.

General Electric Company: *See*—
Acampora, Vincent P., 4,211,989, Cl. 335-17.000.
Alley, Robert P.; Haller, Theodore R.; and Tompkins, Russell E., 4,211,957, Cl. 315-276.000.
Barber, William D.; and Possin, George E., 4,212,082, Cl. 365-118.000.
Bennett, Moreland P.; Cacalloro, Philip A.; and McCloy, Albert J., 4,211,278, Cl. 165-130.000.
Borman, Willem F. H., 4,211,689, Cl. 260-40.00R.
Brisken, Axel F.; and Smith, Lowell S., 4,211,949, Cl. 310-322.000.
Castleberry, Donald E., 4,212,048, Cl. 362-19.000.
Chu, Hing C.; Sahm, William H., III; and Chen, Robert I., 4,212,023, Cl. 357-19.000.
Dehn, Rudolph A., 4,211,911, Cl. 219-10.55F.
Devlin, Charles L.; and Eichelberger, Charles W., 4,212,057, Cl. 364-200.000.
Eichelberger, Charles W.; and Andrejko, Edward S., 4,211,931, Cl. 290-40.00A.
Gelbard, Robert B.; and Griffin, James R., 4,211,090, Cl. 62-283.000.
Haller, Theodore R., 4,211,944, Cl. 310-72.000.
Mark, Victor; and Wilson, Phillip S., 4,211,679, Cl. 260-29.10R.
Martzloff, Francois D., 4,212,045, Cl. 361-127.000.
Miller, Donald E.; and Painter, John P., 4,211,915, Cl. 371-15.000.
Smith, Lowell S.; and Brisken, Axel F., 4,211,948, Cl. 310-322.000.
Steigerwald, Robert L., 4,211,969, Cl. 320-14.000.
Sugalski, Raymond K., 4,211,968, Cl. 320-2.000.
Waldron, Wesley K., 4,212,011, Cl. 340-784.000.

General Foods Corporation: *See*—
Cante, Charles J.; Downhour, Russell; Randall, Lee P.; and Morgan, Jeffrey D., 4,211,797, Cl. 426-2.000.
Scharschmidt, Rudolph K.; and Murphy, Lynn, 4,211,800, Cl. 426-93.000.

General Motors Corporation: *See*—
Benton, Robert L., 4,211,125, Cl. 74-424.80R.
Fancy, Richard E., 4,211,430, Cl. 280-802.000.
Gaunt, Conrad L., 4,210,998, Cl. 29-623.400.
Ludecke, Otto A.; and Rosebrock, Theodore L., 4,211,075, Cl. 60-285.000.

Genis, Gerhard. Lightweight aggregate. 4,211,738, Cl. 264-44.000.

Genshaw, Marvin A.; and White, William I., to Miles Laboratories, Inc. Glucose indicator and method. 4,211,845, Cl. 435-14.000.

Getchell, Williams G.; and Lambert, Norman A., to G. W. Dahl Company, Inc. Valve construction. 4,211,387, Cl. 251-335.00B.

Geurian, Grady O. Cutter assembly for saw chain. 4,211,136, Cl. 83-830.000.

Gibson, Earl W. Chain saw guide bar and sawdust plate. 4,211,007, Cl. 30-383.000.

Giddings & Lewis, Inc.: *See*—
Conners, John P., 4,212,076, Cl. 364-706.000.

Gillespie, Dorie. Brush and deodorant holder. 4,211,750, Cl. 422-123.000.

Girardon, Hubert H.: *See*—
Emeury, Jean-Marie L.; and Girardon, Hubert H., 4,211,874, Cl. 548-304.000.

GKN Transmissions Limited: *See*—
Fisher, Leslie G.; and Palmer, Bertram J., 4,211,589, Cl. 156-73.500.

Glassmeyer, John J., to Pullman Incorporated. Impact resistant bumper for vehicles. 4,211,444, Cl. 293-150.000.

Glauner, Jens; Kauhl, Gunther; Pflug, Hannes; Steinke, Leo; and Weyl, Helmut, to Robert Bosch GmbH. Glow plug arrangement. 4,211,204, Cl. 123-145.00A.

Gleim, William K. T., to Energy Modification, Inc. Separation of asphaltic materials from heptane soluble components in liquified solid hydrocarbonaceous extracts. 4,211,633, Cl. 208-45.000.

Glickman, Kenneth B.: *See*—
Blowsky, Frank C.; and Glickman, Kenneth B., 4,211,404, Cl. 272-141.000.
Blowsky, Frank C.; Glickman, Kenneth B.; and Iscoe, Alan D., 4,211,405, Cl. 272-141.000.

Glitz, Ekkehard, to Licentia Patent-Verwaltungs-G.m.b.H. Method for setting code text generators in ciphering devices. 4,211,891, Cl. 375-2.000.

Glomski, Norman J., to Heil Company, The. Method and apparatus for certifying the output torque curve of a hydraulic hoist for use in dump body applications. 4,211,110, Cl. 73-168.000.

Glownia, Stanislaw: *See*—
Slowinski, Stanislaw; Vasina, Stanislaw; Pasich, Jerzy; Kosek, Jerzy; and Glownia, Stanislaw, 4,211,274, Cl. 164-401.000.

Goldfarb, Vadim L.: *See*—
Grechishkin, Leonid L.; Gavrovskaya, Ljudmila K.; and Goldfarb, Vadim L., 4,211,764, Cl. 424-9.000.

Goldman, Abraham, to RCA Corporation. Aqueous photoresist of casein and N-methylol acrylamide. 4,211,563, Cl. 430-286.000.

Gordon Barlow Design: *See*—
Barlow, Gordon A.; and Janiszewski, Anthony T., 4,211,412, Cl. 273-424.000.

Goshima, Norio: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,211,901, Cl. 200-83.00B.

Gosudarstvenny Nauchno-Issledovatelsky Energeticheskiy Institut Imeni G.M. Krzhizhanovskogo: *See*—
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

Goto, Kenji: *See*—
Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.

Goto, Motoo: *See*—
Nagano, Takeshi; Goto, Motoo; and Tsuji, Yoshiyuki, 4,211,556, Cl. 75-74.000.

Goverde, Bastiaan C.; Janssen, Peter S. L.; and Kostner, Gerhard M., to Akzo N.V. Test-kit and method for the estimation of LP-X. 4,211,530, Cl. 23-230.00B.

GPD, Inc.: *See*—
Segar, Richard B.; and Marascalco, Lewis C., 4,212,079, Cl. 364-900.000.

Graefe, Gernot. Method and apparatus for preparing high grade fertilizer. 4,211,545, Cl. 71-9.000.

Graf, Robert; and Meier, Rene, to BBC Brown Boveri & Company Limited. Portable mast for radio link systems. 4,212,015, Cl. 343-883.000.

Graham, Thomas G., to Singer Company, The. Automatic slow speed for skip stitch mode. 4,211,177, Cl. 112-221.000.

Grampp, Ekkehard; Schmitt, Reinhold; and Uhlig, Helmut, to Rohm GmbH. Methods for making flocculation-resistant citrus juice. 4,211,799, Cl. 426-50.000.

Granda, Edward J.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.

Grande, Magnar J. Energy convertion engine. 4,211,076, Cl. 60-398.000.

Gransden, Raymond E., Jr.: *See*—
Kurfman, Virgil B.; and Gransden, Raymond E., Jr., 4,211,822, Cl. 428-412.000.

Gravisse, Philippe E.; and Van Schoote, Jacques F., to B.R.I.C. (Burea de Recherche pour l'Innovation et la Convervence; and N.V. Anciens Etablissements Alsberge et Van Oost. Photoluminescent textile materials. 4,211,813, Cl. 428-263.000.

Grawey, Charles E., to Caterpillar Tractor Co. Method of building a closed tube-tire. 4,211,592, Cl. 156-123.00R.

Great Plains Manufacturing Incorporated: *See*—
Applequist, Roy E., 4,211,288, Cl. 172-328.000.

Greber, Gerd: *See*—
Roth, Martin; Kvita, Vratislav; and Greber, Gerd, 4,211,705, Cl. 260-326.00C.

Grechishkin, Leonid L.; Gavrovskaya, Ljudmila K.; and Goldfarb, Vadim L., to Nauchno-Issledovatelsky Institut Experimentalnoi Meditsiny. Gastric secretion stimulation with 2-amino-5-(2-aminoethyl)-1,3,4-thiadiozole. 4,211,764, Cl. 424-9.000.

Green, Evert S. Method and apparatus for irrigating container-grown plants. 4,211,037, Cl. 47-80.000.

Green, Robert L. Eyelet clamp for shoes. 4,210,983, Cl. 24-73.0ES.

Greenaway, David L.: *See*—
Nyfeler, Alex; Greenaway, David L.; and Lienhard, Heinz, 4,211,918, Cl. 235-454.000.

Greenspan, Stephen B.: *See*—
Balasubramanian, P. S.; Bertin, Claude R.; and Greenspan, Stephen B., 4,212,026, Cl. 357-41.000.

Greenwald, Richard B., to Polaroid Corp. Photographic processes and compositions employing thioether containing silver halide solvents. 4,211,559, Cl. 430-211.000.

Greenwald, Richard B., to Polaroid Corporation. Photographic compositions with silver halide solvents containing thioether groups. 4,211,562, Cl. 430-456.000.

Greten, Berndt: *See*—
Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,211,984, Cl. 331-97.000.

Griffin, James R.: *See*—
Gelbard, Robert B.; and Griffin, James R., 4,211,090, Cl. 62-283.000.

Grimaldo, Samuel, to American Machine & Hydraulics, Inc. Double taper clamp. 4,211,103, Cl. 72-316.000.

Grose, Robert W.; and Flanigen, Edith M., to Union Carbide Corporation. Crystalline zeolite Upsilon and process for preparing same. 4,211,760, Cl. 423-328.000.

Gross, Benjamin; and Lee, Wooyoung, to Mobil Oil Corporation. FCC Catalyst section control. 4,211,636, Cl. 208-164.000.

Gross, Benjamin; and Lee, Wooyoung, to Mobil Oil Corporation. FCC Catalyst section control. 4,211,637, Cl. 208-164.000.

Gross, Valery N. System for measuring radioactivity of labelled biopolymers. 4,211,747, Cl. 422-81.000.

Grosz-Roll, Friedrich; Schutz, Gerhard; and Streiff, Felix, to Sulzer Brothers Ltd. Heat exchanger having internal fittings. 4,211,277, Cl. 165-109.00T.

Grove, John L.: *See*—
Toomey, Gerald P.; Grove, John L.; and Fries, John R., 4,211,211, Cl. 126-439.000.

Grunleitner, Hans; Kogler, Georg; Kohnlein, Hans; and Tschirner, Peter, to Siemens Aktiengesellschaft. Brushless d-c motor. 4,211,962, Cl. 318-254.000.

Gruppo Lepetit S.p.A.: *See*—
Tarzia, Giorgio; and Panzone, Gianbattista, 4,211,708, Cl. 260-326.460.
Tarzia, Giorgio; and Panzone, Gianbattista, 4,211,709, Cl. 260-326.470.

GTE Laboratories Incorporated: *See*—
Buhrer, Carl F., 4,211,758, Cl. 423-263.000.

GTE Products Corporation: *See*—
Puhak, Peter G.; Bilynsky, John D.; and Sorensen, Fred L., 4,211,465, Cl. 339-144.00T.

Guangorena, Jesus, to Barient Company. Removable main shaft retainer for deck winch. 4,211,388, Cl. 254-344.000.

Gubergrits, Mark Y.: *See*—
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Gueret, Jean-Louis H., to L'Oreal. Brush for brushing the hair or massaging the cutaneous covering. 4,211,217, Cl. 128-67.000.

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Gugliotta, Paul F.; and Hoffmann, David. Tube space frame system. 4,211,044, Cl. 52-200.000.

Guidas: *See*—
Guillot, Jack, 4,211,073, Cl. 60-746.000.

Guillot, Jack, to Guidas. Combustion chamber principally for a gas turbine. 4,211,073, Cl. 60-746.000.

Gulf Research and Development Company: *See*—
Carr, Norman L.; Schleppy, Ronald, Jr.; and Shah, Yatish T., 4,211,631, Cl. 208-8.0LE.
Hartle, Robert J., 4,211,535, Cl. 44-68.000.
Pellegrini, John P., Jr., 4,211,665, Cl. 252-63.000.

Gunawardena, Jaya A., to National Research Development Corporation. Computer store mechanism. 4,212,058, Cl. 364-200.000.

Gusev, Valery F.: *See*—
Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U., 4,211,916, Cl. 371-15.000.

Guthrie, James L.: *See*—
Kehr, Clifton L.; Wood, Louis L.; and Guthrie, James L., 4,211,847, Cl. 521-121.000.

Gwozdz, Joseph W., to McKinney Manufacturing Company. Electric switch concealing hinge. 4,211,990, Cl. 335-205.000.

H. B. Fuller Company: *See*—
Johnson, Richard C.; Kafer, Otto R.; and Todd, Mike J., 4,210,978, Cl. 15-320.000.

Haag, Werner O.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Resin-metal compound complex. 4,211,880, Cl. 560-243.000.

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Haberle, Friedrich: *See*—
Kress, Dieter; and Haberle, Friedrich, 4,211,507, Cl. 407-37.000.

Habu, Takeshi: *See*—
Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,211,835, Cl. 430-403.000.

Hadni, Armand, to Agence Nationale de Valorisation de la Recherche (ANVAR). Monocrystalline like layers, processes of manufacturing

such layers, and articles comprising such layers. 4,211,821, Cl. 428-411.000.

Haep, Heinz, to Rheinmetall GmbH. Fin-stabilized practice missile. 4,211,168, Cl. 102-41.000.

Hafke, Carl: *See*—
Bierbach, Herbert; Kohlen, Rudolf; and Hafke, Carl, 4,211,539, Cl. 48-197.00R.

Hafner, Gunther, to Daimler-Benz Aktiengesellschaft. Pump nozzle for air-compressing injection internal combustion engine. 4,211,202, Cl. 123-457.000.

Halaby, Sami A.; and Caco, Edward S., to Warner-Lambert Company. Guarded razor blade. 4,211,006, Cl. 30-346.550.

Halbritter, Klaus, to BASF Aktiengesellschaft. Preparation of 4-methyl-5-chloromethyl-imidazole. 4,211,875, Cl. 548-342.000.

Hallberg, Rolf O.; Lindstrom, Carl H. M.; and Westerberg, Hakan. Process and a measuring cell for the coulometric determination of the content of a component dissolved in water. 4,211,615, Cl. 204-1.00T.

Haller, Theodore R., to General Electric Company. Amorphous metal electric motor with integral capacitor. 4,211,944, Cl. 310-72.000.

Haller, Theodore R.: *See*—
Alley, Robert P.; Haller, Theodore R.; and Tompkins, Russell E., 4,211,957, Cl. 315-276.000.

Halvorsen, James V., to Bryant Grinder Corporation. Replaceable collet in double diaphragm chuck. 4,211,425, Cl. 279-46.00R.

Hamai, Kyugo, to Nissan Motor Company, Limited. Internal combustion engine with dual induction system and more particularly to combustion chamber design thereof. 4,211,189, Cl. 123-308.000.

Hamaoka, Shigeo: *See*—
Kiuchi, Mitsuyuki; and Hamaoka, Shigeo, 4,211,912, Cl. 219-10.770.

Hamilton, Wallace, to McDowell-Wellman Company. Poke hole closure apparatus. 4,211,536, Cl. 48-87.000.

Hammann, Ingeborg: *See*—
Hartmann, Alfons; Kuhle, Engelbert; and Hammann, Ingeborg, 4,211,790, Cl. 424-285.000.

Hancock Laboratories, Inc.: *See*—
Wright, John T. M., 4,211,325, Cl. 206-438.000.

Hannigan, Noreen A.; and Travis, Terence, to International Business Machines Corporation. Copy production machines having job separation and collation capabilities. 4,211,483, Cl. 355-14.00R.

Hans Beck: *See*—
Bolter, German; Helmle, Herbert; and Beck, Hans, 4,211,599, Cl. 156-494.000.

Hansen, Gary G.; Pengue, Leonard M.; and Watkin, Theodore, to Pitney Bowes, Inc. Unit document feeding mechanism. 4,211,397, Cl. 271-4.000.

Hansen, John D. Lock strike. 4,211,442, Cl. 292-340.000.

Harano, Allen A.: *See*—
Huelsman, Kenneth A.; and Harano, Allen A., 4,212,072, Cl. 364-515.000.

Hardmark, Ragnar M., to Saab-Scania Aktiebolag. Apparatus for measuring the action of forces between wheeled vehicles and substructure. 4,212,063, Cl. 364-426.000.

Hardt, Thomas T., to Computer Peripherals, Inc. Print band one edge guide. 4,211,166, Cl. 101-111.000.

Hares, George B.; and Morse, David L., to Corning Glass Works. High index ophthalmic glasses. 4,211,569, Cl. 106-53.000.

Harford, Jack R., to RCA Corporation. Synchronization and gain control circuit. 4,212,032, Cl. 358-177.000.

Harris Corporation: *See*—
Pan, Jing-Jong, 4,211,987, Cl. 333-230.000.
Roos, Edward V., 4,211,950, Cl. 310-327.000.
Yautz, Michael J., Jr.; and Winslow, Richard N., 4,211,320, Cl. 198-450.000.

Harris, Jimmy W.: *See*—
Buckner, John G.; Lineberry, Cletus E.; and Harris, Jimmy W., 4,211,130, Cl. 83-23.000.

Harrison, Peter G., to Hawker Siddeley Dynamics Engineering, Ltd. Temperature measurement. 4,211,113, Cl. 73-359.00R.

Harrison, Robert E.: *See*—
Frey, Lawrence A.; Harrison, Robert E.; and McGriff, James E., 4,211,389, Cl. 24-269.000.

Hartle, Robert J., to Gulf Research and Development Company. Gasoline fuel compositions containing antiknock additive. 4,211,535, Cl. 44-68.000.

Hartmann, Alfons; Kuhle, Engelbert; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating arthropods with an oxime ester of N-carboxylated-carbamate. 4,211,790, Cl. 424-285.000.

Hartmann, Armin; and Hums, Dieter, to Intong AB. Method of producing gas concrete. 4,211,571, Cl. 106-87.000.

Hartwig, Hans-Joachim: *See*—
Schwanbom, Erik; Hartwig, Hans-Joachim; and Warnow, Detlef, 4,211,221, Cl. 128-204.260.

Hasegawa, Mitsuhiro: *See*—
Atoji, Nobuhisa; Matsumoto, Takashi; Kusumoto, Shoichi; Sato, Kazue; and Hasegawa, Mitsuhiro, 4,211,898, Cl. 179-156.00R.

Hashimoto, Akira: *See*—
Hirasawa, Masataka; Hashimoto, Akira; and Yamazaki, Haruji, 4,212,025, Cl. 357-51.000.

Hashimoto, Junichi, to Pentel Kabushiki Kaisha. Tip-pushed type mechanical pencil. 4,211,500, Cl. 401-65.000.

Hashimoto, Nobuyuki: *See*—
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Hata, Kazuhiko: *See*—
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.

Hatano, Hajime: *See*—
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.

Hatfield, Lowell D.; Blaszczak, Larry C.; and Fisher, Jaçk W., to Eli Lilly and Company. Process for preparation of penicillin and cephalosporin imino halides. 4,211,702, Cl. 260-239.100.

Hattan, Hideaki: *See*—
Fukuyama, Toshifumi; and Hattan, Hideaki, 4,211,923, Cl. 250-239.000.

Hattori, Kyo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Secondary air supply system for the exhaust system of an internal combustion engine. 4,211,074, Cl. 60-276.000.

Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition system for internal combustion engines. 4,211,194, Cl. 123-417.000.

Hattori, Tadashi: *See*—
Iwata, Toshiharu; and Hattori, Tadashi, 4,211,952, Cl. 313-143.000.

Hawes, Stanley P., to Airscrew Howden Limited. Mixed flow fan. 4,211,514, Cl. 415-191.000.

Hawker Siddeley Dynamics Engineering, Ltd.: *See*—
Harrison, Peter G., 4,211,113, Cl. 73-359.00R.

Hayakawa, Takayuki: *See*—
Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, 4,212,062, Cl. 364-414.000.
Nakaya, Chitose; Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yamamoto, Shinji; Tomura, Teruichi; and Hayakawa, Takayuki, 4,211,926, Cl. 250-445.00T.

Hayford, Donald E.: *See*—
Myers, Hugh K; and Hayford, Donald E., 4,211,437, Cl. 282-27.500.

Hazama, Katashi: *See*—
Murakami, Takeshi; and Hazama, Katashi, 4,212,029, Cl. 358-21.00R.

Heard, Robert A. H. Mounting device. 4,211,381, Cl. 248-231.000.

Heaslett, Alastair M.: *See*—
Rudnick, Paul J.; and Heaslett, Alastair M., 4,211,997, Cl. 371-38.000.

Hedges, Walter P.; and Sullivan, C. Gardner, II, to Cyborex Laboratories, Inc. Electrical load restoration method. 4,211,933, Cl. 307-35.000.

Hedstrom Co.: *See*—
Cunard, Joel C., 4,211,401, Cl. 272-86.000.

Heide, Henry A.: *See*—
Pulver, W. Clark; Euverard, Maynard R.; Heide, Henry A.; and Ziolkowski, Ronald P., 4,211,319, Cl. 198-432.000.

Heil Company, The: *See*—
Glomski, Norman J., 4,211,110, Cl. 73-168.000.

Heimburg, Richard W.; and Stewart, Donald M. Method of constructing a burner. 4,210,995, Cl. 29-157.00R.

Hein, Carl C.; Silver, Harold K.; Spitz, Joseph J.; and Seidler, Donald W., to American Can Company. Blister package. 4,211,326, Cl. 206-484.000.

Heine, Helmut A.; Rosenbusch, Helmut W.; and Schmidt, Otto H., to Heine Optotechnik GmbH & Co. KG. Endoscope housing cover hinge construction utilizing a spring, ball and bore arrangement in combination with a hinge pin. 4,211,215, Cl. 128-4.000.

Heine Optotechnik GmbH & Co. KG: *See*—
Heine, Helmut A.; Rosenbusch, Helmut W.; and Schmidt, Otto H., 4,211,215, Cl. 128-4.000.

Heinrich Prinkmann Anlagenvernachtung: *See*—
Stoll, Kurt; Hinder, Herbert; and Corpus, Nikolaus, 4,211,155, Cl. 98-115.0LH.

Helle, Michel: *See*—
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Hellstrom, Melbourne J.; Perlin, Allen I.; and Kutlik, Edward, to CGR Medical Corporation. Computerized tomography system. 4,211,927, Cl. 250-445.00T.

Helmle, Herbert: *See*—
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Helms, Charles R., to Container Corporation of America. Container closure. 4,211,336, Cl. 220-270.000.

Henderson, Claude L., to General Aviation Electronics, Inc. Navigating device. 4,212,067, Cl. 364-460.000.

Hendriks, Johannes H., to U.S. Philips Corporation. Device for processing high-frequency electrical signals. 4,211,993, Cl. 336-131.000.

Henle, Burkhard; Vukasovic, Ivica; and Fiorentzis, Michael, to BBC Brown Boveri & Company Limited. Current-measuring input for an electronic relay. 4,211,934, Cl. 307-98.000.

Henrich, Donald A.; and Rose, Edgar, to Outboard Marine Corporation. Marine propeller fish line and weed cutter. 4,211,515, Cl. 416-146.00R.

Henry, Charles L.; and White, James E., to Akzona Incorporated. Copolyester yarns and fibers dyeable without carrier at atmospheric pressure. 4,211,678, Cl. 260-22.00D.

Henry, William E., to Phillips Petroleum Company. Method for orienting a borehole core. 4,211,974, Cl. 324-377.000.

Hepinstall, James T., Jr.: *See*—
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Herbst, Heiner: *See*—
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Hercules Incorporated: *See*—
Vandenberg, Edwin J., 4,211,670, Cl. 252-429.00B.

Hermann, Karl H.; and Dorsch, Hans-Lothar, to Bayer Aktiengesellschaft. Process for isolating triarylmethane dyestuffs. 4,211,716, Cl. 260-391.000.

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Herold, Heiko: *See*—
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Herrmidifier Company, Inc.: *See*—
Berlin, Gary L., 4,211,735, Cl. 261-116.000.

Hess, Peter; and Rampel, Hans, to Metallwerk Max Brose GmbH & Co. Drive arrangement for an automotive window operating mechanism. 4,211,122, Cl. 74-89.200.

Hesston Corporation: *See*—
Garrison, Harold K., 4,211,287, Cl. 172-311.060.
Rhodes, Keith H., 4,211,060, Cl. 56-294.000.

Hewlett-Packard Company: *See*—
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Hinder, Herbert: *See*—
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Hirasawa, Kunio: *See*—
Tsukushi, Masanori; Kashimura, Katsuichi; Koyanagi, Osamu; Yoshioka, Yoshio; and Hirasawa, Kunio, 4,211,903, Cl. 200-148.00D.

Hirasawa, Masataka; Hashimoto, Akira; and Yamazaki, Haruji, to Tokyo Shibaura Electric Co., Ltd. Voltage dividing integrated circuit device. 4,212,025, Cl. 357-51.000.

Hirose, Kazuhito: *See*—
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Hirsch, Walter: *See*—
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Hitachi, Ltd.: *See*—
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Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, 4,211,276, Cl. 165-1.000.
Kokie, Norio; Kubo, Masaharu; and Nagahara, Shusaku, 4,212,034, Cl. 358-213.000.
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Matsuura, Shigeo; Akutsu, Eisaku; and Miyamoto, Hiroshi, 4,211,988, Cl. 334-16.000.
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Nishikawa, Akio; Katagiri, Junichi; Kinjo, Noriyuki; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,211,686, Cl. 260-40.00R.
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Ono, Yuichi; Mori, Mitsuhiro; Morioka, Makoto; Ito, Kazuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,212,021, Cl. 357-17.000.
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Hocutt, Larry E.: *See*—
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Hodson, William A.: *See*—
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Hofer, Kurt; Moesch, Rudolf; and Tscheulin, Guenther, to Sandoz Ltd. Fluorene phosphonites and thiophosphonites as antioxidants for organic materials. 4,211,731, Cl. 260-932.000.

Hoff, Glen R., to Standard Oil Company (Indiana). Olefin polymerization catalyst. 4,211,671, Cl. 252-431.00N.

Hoffman, Charles A.; Weeton, John W.; and Orth, Norman W., to United States of America, National Aeronautics and Space Administration. Method for alleviating thermal stress damage in laminates. 4,211,354, Cl. 228-118.000.

Hoffman-La Roche Inc.: *See*—
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,211,724, Cl. 260-562.00B.

Hoffman, Paul H.; and Lessig, John A. Shrimp processing method. 4,210,982, Cl. 17-48.000.

Hoffmann, David: *See*—
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Hofmann, George F., to Boeing Company, The. Circuit board testing apparatus and method. 4,211,917, Cl. 371-20.000.

Hogan, Lawrence R., to Cole-Parmer Instrument Company. Fluid pump and quick release mounting arrangement therefor. 4,211,519, Cl. 417-360.000.

Hokama, Yosh, to International Beauty Distributor. Manicure nail smoothing and buffing. 4,211,246, Cl. 132-76.400.

Hokushin Electric Works, Ltd.: *See*—
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Holekamp, Malcolm L. Vertically adjustable mast assembly for a dredge. 4,211,020, Cl. 37-65.000.

Holl, Helmar: *See*—
Papajewski, Reinhold; Holl, Helmar; and Schmedtkord, Ulrich, 4,211,373, Cl. 242-20.000.

Holland, George W.; Jernow, Jane L.; and Rosen, Perry, to Hoffman-La Roche Inc. 16-Substituted prostaglandins. 4,211,724, Cl. 260-562.00B.

Holmes, Curtis F.: *See*—
Mueller, Max A.; and Holmes, Curtis F., 4,211,832, Cl. 429-105.000.

Holt, Harley R., to Bunker Ramo Corporation. Conductor terminating apparatus. 4,210,997, Cl. 29-566.300.

Holzman, Melvyn A., to Deutsch Company Electronic Components Division, The. Optical coupling device. 4,211,469, Cl. 350-96.160.

Home of Champions: *See*—
Tomar, Julius, 4,211,407, Cl. 273-60.00B.

Honeywell Inc.: *See*—
Mueller, Dale A.; and Serber, Stephen L., 4,211,089, Cl. 62-209.000.
Schilling, Roger A., 4,211,526, Cl. 431-69.000.

Honeywell Information Systems Inc.: *See*—
Rathbun, Donald J., 4,212,038, Cl. 360-41.000.

Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., to Outokumpu Oy. Method of refining of melts by means of a pulverous solid material and/or a gas. 4,211,553, Cl. 75-53.000.

Honny Chemicals Company, Ltd.: *See*—
Yoshida, Shinichi, 4,211,824, Cl. 428-462.000.

Hood, Stanley R. Indicating thermometer. 4,211,114, Cl. 73-363.900.

Hooker Chemicals & Plastics Corp.: *See*—
Cotter, Byron R., 4,211,721, Cl. 260-465.00G.
Salee, Gideon, 4,211,687, Cl. 260-40.00R.

Hoover Universal, Inc.: *See*—
Hunerberg, Edward C., 4,211,523, Cl. 425-4.00C.
Young, David A.; and Kimball, Bruce S., 4,211,427, Cl. 280-406.00A.

Hopkins, David A., to Valeron Corporation, The. Adjustable boring head. 4,211,510, Cl. 408-186.000.

Hopkins, Robert S., Jr., to RCA Corporation. Circuit for displaying characters on limited bandwidth, raster scanned display. 4,212,008, Cl. 340-723.000.

Hori, Sankichi: *See*—
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,211,552, Cl. 75-24.000.

Horiba, Isao: *See*—
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Horie, Mitsuyuki: *See*—
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Hornfeck, Werner: *See*—
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Horng, Cheng T.; and Schwenker, Robert O., to International Business Machines Corporation. Process for making large area isolation trenches utilizing a two-step selective etching technique. 4,211,582, Cl. 148-1.500.

Horsfield, Sydney G.; Kuhlmann, George E.; and Bemis, Alan G., to Standard Oil Company (Indiana). Preparation of phthalic acid by single step continuous air oxidation of liquid ortho-xylene. 4,211,881, Cl. 562-416.000.

Horstmann, Walter: *See*—
Muschelknautz, Edgar; Herold, Heiko; Brunner, Kunz; and Horstmann, Walter, 4,211,604, Cl. 159-4.00D.

Hosie, Alistair M. Boat loading device. 4,211,513, Cl. 414-559.000.

Hosokawa, Yorio: *See*—
Kitamura, Hiroyuki; Hosokawa, Yorio; and Fukasawa, Katsumi, 4,212,056, Cl. 363-96.000.

Hosono, Takashi: *See*—
Tooyama, Akira; Ohkoshi, Akio; Tooyama, Takashi; Yukawa, Takahiro; and Hosono, Takashi, 4,212,030, Cl. 358-67.000.

Hotimsky, Eric P. L. Device for the balanced fixing and mounting of blades in machines provided to cut, crush and hash. 4,211,371, Cl. 241-282.100.

Hottovy, John D.: *See*—
McDaniel, Max P.; Hottovy, John D.; and Welch, Melvin B., 4,211,863, Cl. 528-483.000.

Hoult, David P. Fish raising. 4,211,183, Cl. 119-3.000.

Howard, Durrell U. Adjustable suspension assembly. 4,211,429, Cl. 280-716.000.

Howell, Forrest W.: *See*—
Colletti, John B.; and Howell, Forrest W., 4,211,152, Cl. 92-168.000.

Howey, Jon A.: *See*—
Anderson, Gary C.; Howey, Jon A.; and Patel, Harish A., 4,211,227, Cl. 128-296.000.

Hoying, Richard C.: *See*—
Barnett, Charles J.; Emmick, Thomas L.; and Hoying, Richard C., 4,211,870, Cl. 544-336.000.

Hoyt, Clifton A. System for calculating and displaying sales information. 4,212,068, Cl. 364-465.000.

Hrusch, Louis C., to Pneumo Corporation. Split lock ring for locking actuator and method for manufacturing the same. 4,211,149, Cl. 92-27.000.

Huber, Theodor; Borowski, Kurt; and Egger, Gerhard, to AGFA-Gevaert, A.G. Circuit for indicating the condition of the battery in a photographic camera. 4,211,478, Cl. 354-60.00L.

Hubert, Jacques; and Ory, Jean-Marie, to Societe Chimique des Charbonnages. Movement detector. 4,212,005, Cl. 340-603.000.

Hubert, Odile: *See*—
Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, 4,211,475, Cl. 350-357.000.

Huebner, Steven R.: *See*—
Mayers, Richard R.; Huebner, Steven R.; and Chojnacki, Dennis A., 4,211,088, Cl. 62-64.000.

Huelsman, Kenneth A.; and Harano, Allen A., to Hughes Aircraft Company. Digital scan converter with programmable transfer function. 4,212,072, Cl. 364-515.000.

Huggins, Keith G.; and Roitt, Ivan M. Specific binding assay techniques. 4,211,762, Cl. 424-1.000.

Hughes Aircraft Company: *See*—
Huelsman, Kenneth A.; and Harano, Allen A., 4,212,072, Cl. 364-515.000.
Schmitz, Lawrence S.; Dodds, Curtis E.; and Whipple, John, 4,211,065, Cl. 368-47.000.

Hughes, Alfred J.: *See*—
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., 4,211,816, Cl. 428-296.000.

Hughes, David E.: *See*—
Yocum, William C.; and Hughes, David E., 4,211,386, Cl. 251-122.000.

Hughes, John M. F.: *See*—
Benson, Nigel C.; Hughes, John M. F.; Kingslake, Denis; and Symonds, David G., 4,210,987, Cl. 26-89.000.

Hughes, Peter I.; Lynch, Robert J.; and Ahrens, James J. Bulk dry food product storage, display and dispensing apparatus. 4,211,343, Cl. 222-130.000.

Hughes Tool Company: *See*—
Dill, Herbert C.; and Scales, Stanley R., 4,211,508, Cl. 407-120.000.

Hulstyn, Jan: *See*—
Leonard, Rex D.; and Hulstyn, Jan, 4,211,086, Cl. 62-50.000.

Hums, Dieter: *See*—
Hartmann, Armin; and Hums, Dieter, 4,211,571, Cl. 106-87.000.

Hund, Franz; Linde, Gunter; and Kresse, Peter, to Bayer Aktiengesellschaft. Iron oxide-based anti-corrosion pigments. 4,211,565, Cl. 106-14.050.

Hunerberg, Edward C., to Hoover Universal, Inc. Gas-flow control apparatus for equipment for producing foamed plastic. 4,211,523, Cl. 425-4.00C.

Hung, William M.: *See*—
Schmidt, Paul J.; and Hung, William M., 4,211,872, Cl. 546-116.000.

Hunt, Norman: *See*—
Cox, Michael D.; Hunt, Norman; and Colver, Kenneth W., 4,211,193, Cl. 123-352.000.

Hunt, Ronald E.; and Souliere, Ernest G., to International Business Machines Corporation. Paper feeding control apparatus. 4,211,499, Cl. 400-637.600.

Hunyar, Csaba K., to MCA Disco-Vision, Inc. Process for producing a stamper for videodisc purposes. 4,211,617, Cl. 204-5.000.

Hurter, Rudolf, to Ciba-Geigy Corporation. Disazo dyes containing an acetoacetanilide middle component. 4,211,698, Cl. 260-176.000.

Hurvitz, Arnold. Method and means for processing metal sheets. 4,211,102, Cl. 72-304.000.

Hussey Manufacturing Company, Inc.: *See*—
Sutter, David L., 4,211,450, Cl. 297-232.000.

Hyslop, Karl J.: *See*—
Barnabo, Robert E.; and Hyslop, Karl J., 4,211,104, Cl. 72-467.000.

I. H. W. Engineering Limited: *See*—
Shephard, Philip C., 4,211,451, Cl. 297-362.000.

I.W.S. Nominee Company Limited: *See*—
Mehta, Parvez; and Warnes, Anthony M., 4,211,261, Cl. 139-425.00R.

Ichikawa, Akira; Nakata, Kazuo; and Hirose, Kazuhito, to Hitachi, Ltd. Multifrequency signal receiving system. 4,211,897, Cl. 179-84.0VF.

ICI Australia Limited: *See*—
Dixon, David R.; Lydiate, Jack; and Lubbock, Frederick J., 4,211,664, Cl. 252-62.540.

Ideal Toy Corporation: *See*—
Nielsen, Edwin A., 4,211,409, Cl. 273-86.00B.

Igarashi, Sadaki: *See*—
Kobayashi, Tamotsu; and Igarashi, Sadaki, 4,211,971, Cl. 324-140.00D.

Igarashi, Yoshiaki: *See*—
Akiyama, Ryo; and Igarashi, Yoshiaki, 4,211,967, Cl. 318-490.000.

Ihara Chemical Industry Co., Ltd.: *See*—
Koike, Wataro; Kimoto, Takahiro; and Matsui, Sadayoshi, 4,211,723, Cl. 260-544.00K.

Iino, Yasuo: *See*—
Yoshida, Masashi; and Iino, Yasuo, 4,212,040, Cl. 360-96.300.

Ikeda, Masayuki; and Naka, Takahiro, to Kabushiki Kaisha Suwa Seikosha. Time signal timepiece. 4,211,064, Cl. 368-272.000.

Ikeda, Tamotsu: *See*—
Nishikawa, Akio; Katagiri, Junichi; Kinjo, Noriyuki; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,211,686, Cl. 260-40.00R.

Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirobumi, to Kabushiki Kaisha Seikosha. Thickness-shear mode quartz oscillator with an added non-circular mass. 4,211,947, Cl. 310-312.000.

Ikeyama, Kazunori: *See*—
Sakai, Koichi; and Ikeyama, Kazunori, 4,211,157, Cl. 99-306.000.

Imperial Chemical Industries Limited: *See*—
Baird, David B.; Costello, Alan T.; Fishwick, Brian R.; McClelland, Robert D.; and Smith, Peter, 4,211,696, Cl. 260-152.000.
Benson, Nigel C.; Hughes, John M. F.; Kingslake, Denis; and Symonds, David G., 4,210,987, Cl. 26-89.000.
Shearing, Herbert J., 4,211,680, Cl. 260-29.2TN.
Smith, Leslie H., 4,211,878, Cl. 549-78.000.

Inadomi, Seigo: *See*—
Kunimune, Kohichi; Inadomi, Seigo; and Yoshida, Satomi, 4,211,819, Cl. 428-374.000.

Indech, Robert. Groove guided piston linkage for an internal combustion engine. 4,211,190, Cl. 123-48.00B.

Industrial Designs and Services: *See*—
Crane, Walton B., 4,211,358, Cl. 229-23.00C.

Industrial Electronic Hardware Corp.: *See*—
Wescott, Ronald O., 4,211,461, Cl. 339-91.00R.

Industrie-Werke Karlsruhe-Augsburg Aktiengesellschaft: *See*—
Fichtl, Karl; Berger, Rudolf; Durnfelder, Otto; and Pilz, Erich, 4,211,164, Cl. 100-145.000.

Ing. C. Olivetti & C., S.p.A.: *See*—
Vittorelli, Vittore, 4,212,077, Cl. 364-900.000.

Ingersoll-Rand Company: *See*—
D'Oporto, Tito R.; and Chun, Delo K. K., 4,211,127, Cl. 81-63.000.

Inmont Corporation: *See*—
Steward, Raymond G.; Boyd, Stuart G.; and Civardi, Frank P., 4,211,590, Cl. 156-79.000.

Inomata, Koichiro; and Yamada, Masakazu, to Tokyo Shibaura Electric Co., Ltd. Samarium-cobalt-copper-iron-titanium permanent magnets. 4,211,585, Cl. 148-31.570.

Inoue, Hiromichi: *See*—
Inukai, Takashi; Inoue, Hiromichi; and Sato, Hideo, 4,211,666, Cl. 252-299.000.

Inoue, Nobutaro, to Shintom Kabushiki Kaisha. Compound acoustic apparatus for automotive vehicles. 4,211,976, Cl. 455-344.000.

Institut National de la Recherche Agronomique and Aussedat-Rey: *See*—
Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, 4,211,795, Cl. 426-2.000.

Interlake, Inc.: *See*—
Kunka, Bernard P.; and Simonelic, George B., 4,211,350, Cl. 227-8.000.

International Beauty Distributor: *See*—
Hokama, Yosh, 4,211,246, Cl. 132-76.400.

International Business Machines Corporation: *See*—
Babinski, John P.; Bertelsen, Bruce I.; Raacke, Karl H.; and Sirgo, Valdeko H., 4,211,505, Cl. 406-19.000.
Balasubramanian, P. S.; Bertin, Claude R.; and Greenspan, Stephen B., 4,212,026, Cl. 357-41.000.
Cowher, Melvyn E.; and Sedgwick, Thomas O., 4,211,803, Cl. 427-128.000.
Fang, Frank F.; and Shih, Kwang K., 4,211,586, Cl. 148-175.000.
Hannigan, Noreen A.; and Travis, Terence, 4,211,483, Cl. 355-14.00R.
Horng, Cheng T.; and Schwenker, Robert O., 4,211,582, Cl. 148-1.500.

Hunt, Ronald E.; and Souliere, Ernest G., 4,211,499, Cl. 400-637.600.
Lapadula, Constantino; and Lin, Burn J., 4,211,834, Cl. 430-326.000.
Panissidi, Hugo A.; Shelton, Glenmore L., Jr.; and Will, Peter M., 4,211,147, Cl. 91-184.000.
Sambucetti, Carlos J., 4,211,616, Cl. 204-2.000.
International Flavors & Fragrances Inc.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.
International Mobile Machines Incorporated: *See*—
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,211,938, Cl. 307-233.00R.
International Telephone and Telegraph Corporation: *See*—
Edwards, Ernest; and Jukes, Michael K., 4,211,395, Cl. 269-254.00R.
Einem, Robert E.; Richards, Joseph A.; and Gassowski, Jerzy R., 4,211,495, Cl. 400-124.000.
Seitz, Lamont J.; and Fort, Geza, 4,211,108, Cl. 73-141.0AB.
Steensma, Peter D., 4,211,468, Cl. 350-96.100.
Vincent, Arthur L., 4,211,748, Cl. 422-90.000.
Intong AB: *See*—
Hartmann, Armin; and Hums, Dieter, 4,211,571, Cl. 106-87.000.
Inui, Hiroo: *See*—
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.
Inukai, Takashi; Inoue, Hiromichi; and Sato, Hideo, to Chisso Corporation. Liquid crystal compounds. 4,211,666, Cl. 252-299.000.
Ioset, Robert M., to Dow Chemical Company, The. Ronnel composition and use to promote nutritional response. 4,211,775, Cl. 424-225.000.
IRI-E Kosan Corporation: *See*—
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,211,552, Cl. 75-24.000.
Isaacks, Kenneth M., to Otis Engineering Corporation. Plunger lift system. 4,211,279, Cl. 166-64.000.
Iscoe, Alan D.: *See*—
Blowsky, Frank C.; Glickman, Kenneth B.; and Iscoe, Alan D., 4,211,405, Cl. 272-141.000.
Iseki Agricultural Machinery Mfg. Co. Ltd.: *See*—
Kanetou, Yuuji; and Uetani, Hirofumi, 4,211,921, Cl. 250-202.000.
Ishida, Takahiro: *See*—
Yamada, Koichi; Yoshihara, Masao; Ishida, Takahiro; and Sato, Kazuo, 4,211,667, Cl. 252-313.00R.
Ishigaki, Yukinobu: *See*—
Muraoka, Teruo; Yamazaki, Masami; and Ishigaki, Yukinobu, 4,211,979, Cl. 455-306.000.
Ishii, Kyoko, administrator: *See*—
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and Ishii, Kyoko, administrator, 4,211,118, Cl. 73-592.000.
Ishii, Ryoichi, deceased: *See*—
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and Ishii, Kyoko, administrator, 4,211,118, Cl. 73-592.000.
Ishikawa, Hidehiko: *See*—
Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, 4,211,558, Cl. 430-359.000.
Ishikawa, Yuichi: *See*—
Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, 4,211,276, Cl. 165-1.000.
Ito, Kazuhiro: *See*—
Ono, Yuichi; Mori, Mitsuhiro; Morioka, Makoto; Ito, Kazuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,212,021, Cl. 357-17.000.
Ito, Tetsuo: *See*—
Suminoe, Taro; Ito, Tetsuo; and Masuhara, Eiichi, 4,211,682, Cl. 260-29.300.
Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, to Hitachi, Ltd. Method of making fin elements for heat exchangers. 4,211,276, Cl. 165-1.000.
Itoh, Tsutomu, to Onoda Cement Co., Ltd. Laminated paper container with sealed seams. 4,211,339, Cl. 220-450.000.
ITT Industries, Incorporated: *See*—
Lupertz, Hans-Henning, 4,211,310, Cl. 188-73.300.
Iwagami, Hisao: *See*—
Nakamori, Shigeru; Yokozeki, Kenzo; Mitsugi, Koji; Eguchi, Chikahiko; and Iwagami, Hisao, 4,211,840, Cl. 435-107.000.
Iwai, Fumio; Kokiso, Masakazu; Koiso, Junichi; and Ogino, Tamio, to Konishiroku Photo Industry Co., Ltd. Drum cleaning blade for image transfer type electrophotographic copying machine. 4,211,484, Cl. 355-15.000.
Iwane, Masahiko: *See*—
Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,212,059, Cl. 364-200.000.
Iwasaki, Motoaki: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,211,901, Cl. 200-83.00B.
Iwata, Kazuo: *See*—
Matsuda, Akira; Tojo, Tetsuo; and Iwata, Kazuo, 4,211,852, Cl. 525-240.000.
Iwata, Toshiharu; and Hattori, Tadashi, to Nippon Soken, Inc. Spark plug. 4,211,952, Cl. 313-143.000.
Izawa, Kiyoshi: *See*—
Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, 4,211,558, Cl. 430-359.000.
Izu, Masatsugu; and Cannella, Vincent D., to Energy Conversion Devices, Inc. Method of high sensitivity imaging and imaging film therefor. 4,211,838, Cl. 430-502.000.
J. I. Case Company: *See*—
Frisbee, Claude M., 4,211,282, Cl. 172-7.000.
Sickler, Emory J., 4,211,364, Cl. 237-12.30A.
J. M. Huber Corporation: *See*—
Scott, Oscar T., IV, 4,211,578, Cl. 106-307.000.
Jackson, Herman R. Method for removing impurities and residual moisture from petroleum fuels. 4,211,639, Cl. 208-188.000.
Jackson, Larry D. Electric hair curling device having a rotatable curling barrel. 4,211,914, Cl. 219-225.000.
Jacob, Jonah H.: *See*—
Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., 4,211,983, Cl. 331-94.5PE.
Jacobson, Ilamae W. Self measuring garment assembly. 4,211,011, Cl. 33-15.000.
Jacuzzi Bros., Incorporated: *See*—
Burgess, John D.; and Jacuzzi, Virgil J., 4,211,216, Cl. 128-66.000.
Jacuzzi, Virgil J.: *See*—
Burgess, John D.; and Jacuzzi, Virgil J., 4,211,216, Cl. 128-66.000.
Jagenberg Werke Atkiengesellschaft: *See*—
Weiss, Peter; and Thievessen, Karl, 4,211,375, Cl. 242-81.000.
Jager. Circulating air classifier or separator. 4,211,641, Cl. 209-144.000.
Jamgochian, Ralph; Oley, Leonard; Stachnik, Joseph; and Tutella, Alfred L., to ARA Services, Inc. Combination hot and cold drink machine. 4,211,342, Cl. 222-129.400.
Janezich, Frank A.: *See*—
Tokar, Joseph C.; and Janezich, Frank A., 4,211,543, Cl. 55-485.000.
Janiszewski, Anthony T.: *See*—
Barlow, Gordon A.; and Janiszewski, Anthony T., 4,211,412, Cl. 273-424.000.
Janssen, Peter S. L.: *See*—
Goverde, Bastiaan C.; Janssen, Peter S. L.; and Kostner, Gerhard M., 4,211,530, Cl. 23-230.00B.
Japan Synthetic Rubber Co., Ltd.: *See*—
Suminoe, Taro; Ito, Tetsuo; and Masuhara, Eiichi, 4,211,682, Cl. 260-29.300.
Japan Tobacco & Salt Public Corporation, The: *See*—
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.
Jeffers, Albert L.: *See*—
Bradt, Rexford H., 4,211,736, Cl. 264-8.000.
Jenkins Metal Corporation: *See*—
Collins, Walter W., 4,211,003, Cl. 30-162.000.
Jennrich, George J., to Allis-Chalmers Corporation. Rolls for compacting mill. 4,211,524, Cl. 425-296.000.
Jensen, Joergen, to Bruel & Kjaer A/S. Shear type prestressed piezoelectric force transducer. 4,211,951, Cl. 310-329.000.
Jensen, Richard W.; and Peterson, Richard H. Pedal control circuits for electronic piano. 4,211,141, Cl. 84-1.270.
Jensen, William C., to Western Farm Services Inc. Process for preparation of ammonium polyphosphate. 4,211,546, Cl. 71-34.000.
Jernow, Jane L.: *See*—
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,211,724, Cl. 260-562.00B.
Jet Aeration Company (Jet Inc.): *See*—
Jordan, Edward J., 4,211,655, Cl. 210-108.000.
JLG Industries, Inc.: *See*—
Toomey, Gerald P.; Grove, John L.; and Fries, John R., 4,211,211, Cl. 126-439.000.
Johannsen, Donald O.: *See*—
Saele, Arvid H.; and Johannsen, Donald O., 4,211,079, Cl. 60-433.000.
Johanson, Ronald C.; and McDonald, Bill W., to Foam-Ply, Inc. Concrete form structure. 4,211,385, Cl. 249-192.000.
Johansson, Carl E., to SKF Industrial Trading and Development Co. B.V. Rock drill bit lubrication system. 4,211,453, Cl. 308-8.200.
Johnson, Curtis C., deceased: *See*—
Raemer, Daniel B.; Gehmlich, Dietrich K.; Westenskow, Dwayne R.; and Johnson, Curtis C., deceased, 4,211,239, Cl. 128-716.000.
Johnson, George C., to Mobil Oil Corporation. Synthesis of zeolite S. 4,211,756, Cl. 423-118.000.
Johnson, John H.; and Fields, Joseph E., to Monsanto Company. Method for controlling obesity. 4,211,765, Cl. 424-78.000.
Johnson, Lonnie G. Smoke detecting timer controlled thermostat. 4,211,362, Cl. 236-47.000.
Johnson, Richard C.; Kafer, Otto R.; and Todd, Mike J., to H. B. Fuller Company. Automatic carpet cleaning machine. 4,210,978, Cl. 15-320.000.
Johnson, Verle D.: *See*—
White, William G.; and Johnson, Verle D., 4,211,001, Cl. 29-747.000.
Johnstone, Robert A. W.: *See*—
Entwistle, Ian D.; and Johnstone, Robert A. W., 4,211,727, Cl. 568-437.000.
Joly, Jean: *See*—
Braconnier, Daniel; Joly, Jean; and Renault, Michele, 4,211,812, Cl. 428-224.000.

Jones, Kenneth: *See—*
Emblem, Harold G.; Das, Anup K.; and Jones, Kenneth, 4,211,717, Cl. 556-470.000.

Jordan, Edward J., to Jet Aeration Company (Jet Inc.). Upflow filter construction. 4,211,655, Cl. 210-108.000.

Josten, Walter: *See—*
Dittrich, Werner; Josten, Walter; Nestler, Heinz; and Schnippering, Friedhelm, 4,211,567, Cl. 106-38.350.

Jourdan, Louis J.; and Saillour, Jean M. Machine tools and machine for removing stem from vegetable, such as cabbage or cauliflower. 4,211,161, Cl. 99-638.000.

Joyner, James M.: *See—*
Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,211,692, Cl. 260-45.70P.

Judd Ringer Corporation: *See—*
Ringer, Charles J., 4,211,033, Cl. 47-45.000.

Jukes, Michael K.: *See—*
Edwards, Ernest; and Jukes, Michael K., 4,211,395, Cl. 269-254.00R.

Julien, Hermann: *See—*
Neubeck, Kurt; and Julien, Hermann, 4,211,000, Cl. 29-714.000.

Junginger, Klaus M.; and Kieferle, Hermann, to Stierlen-Maquet Aktiengesellschaft. Method of and remote control apparatus for remotely controlling a medical appliance. 4,211,998, Cl. 340-171.00R.

Kabachek, Vladimir G.: *See—*
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Kusumoto, Yasuo; and Miyazaki, Joichi, 4,211,066, Cl. 368-113.000.

Kabushiki Kaisha Kenseido: *See—*
Ohno, Yoshio, 4,211,618, Cl. 204-11.000.

Kabushiki Kaisha Mikado: *See—*
Naka, Kozaburo, 4,211,048, Cl. 52-700.000.

Kabushiki Kaisha Seikosha: *See—*
Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirobumi, 4,211,947, Cl. 310-312.000.
Oda, Hajime; Samejima, Toshihide; Matsumura, Toshio; Moritani, Nakanobu; and Fujita, Masanori, 4,211,067, Cl. 368-185.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Ikeda, Masayuki; and Naka, Takahiro, 4,211,064, Cl. 368-272.000.

Kabushiki Kaisha Teikoku Denki Seisakusho: *See—*
Sato, Tetsuya; Kato, Osamu; and Saito, Hisashi, 4,211,973, Cl. 324-158.0MG.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Furukawa, Haruki; Usami, Susumu; and Nakaho, Junichi, 4,211,432, Cl. 280-808.000.
Yasumatsu, Jun, 4,211,377, Cl. 242-107.200.

Kafer, Otto R.: *See—*
Johnson, Richard C.; Kafer, Otto R.; and Todd, Mike J., 4,210,978, Cl. 15-320.000.

Kajima Kensetsu Kabushiki Kaisha: *See—*
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.

Kalbfuss, Richard, to BBC Brown Boveri & Company Limited. Combustion chamber for a gas turbine. 4,211,069, Cl. 60-39.020.

Kalina, Theodore: *See—*
Eakman, James M.; Marshall, Harry A.; and Kalina, Theodore, 4,211,669, Cl. 252-373.000.

Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K. Dual current supply system for aluminum-producing electrolyzers. 4,211,626, Cl. 204-243.00M.

Kambic, Raymond V.: *See—*
Butts, Lawrence D.; and Kambic, Raymond V., 4,211,443, Cl. 292-341.160.

Kamei, Tatsuya: *See—*
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Kamio, Kunimasa: *See—*
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.
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Karasev, Vadim A.: *See—*
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Karl Lautenschlager KG Mobelbeschiageabrik: *See—*
Lautenschlager, Karl, Jr.; Lautenschlager, Horst; and Lautenschlager, Reinhard, 4,210,980, Cl. 16-171.000.

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Kartridg Pak Co., The: *See—*
Tucker, Phillip C., 4,211,051, Cl. 53-138.00A.

Kashimura, Katsuichi: *See—*
Tsukushi, Masanori; Kashimura, Katsuichi; Koyanagi, Osamu; Yoshioka, Yoshio; and Hirasawa, Kunio, 4,211,903, Cl. 200-148.00D.

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Amemiya, Yoshihito; and Kato, Kotaro, 4,210,996, Cl. 29-610.00R.

Kato, Osamu: *See—*
Sato, Tetsuya; Kato, Osamu; and Saito, Hisashi, 4,211,973, Cl. 324-158.0MG.

Kato, Sadamu: *See—*
Suzuki, Isao; Yomogida, Toshihiko; and Kato, Sadamu, 4,212,081, Cl. 364-900.000.

Kato, Shogo: *See—*
Kitai, Kiyoshi; Kobayashi, Masaru; Yonemoto, Tomoo; and Kato, Shogo, 4,211,480, Cl. 354-234.000.

Kato, Tomoyasu: *See—*
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.

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Kaufman, Robert J.: *See—*
Franz, John E.; and Kaufman, Robert J., 4,211,548, Cl. 71-87.000.
Franz, John E.; and Kaufman, Robert J., 4,211,732, Cl. 260-938.000.

Kauhl, Gunther: *See—*
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Kawagai, Kenji: *See—*
Aoki, Kazuhide; and Kawagai, Kenji, 4,211,942, Cl. 307-355.000.

Kawai, Masaki: *See—*
Toyama, Jin-Ichi; and Kawai, Masaki, 4,211,965, Cl. 318-341.000.

Kawai, Mitsuji. Compressive pressure augmentation device. 4,211,197, Cl. 123-585.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph, 4,211,138, Cl. 84-1.010.

Kawaki, Takeo: *See—*
Sugio, Akitoshi; and Kawaki, Takeo, 4,211,857, Cl. 528-215.000.

Kawamura, Yoshihisa; and Saito, Masaaki, to Nissan Motor Company, Limited. Fuel supplying device for internal combustion engine. 4,211,191, Cl. 123-52.00M.

Kawata, Masahiko: *See—*
Ono, Yuichi; Mori, Mitsuhiro; Morioka, Makoto; Ito, Kazuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,212,021, Cl. 357-17.000.

Kearney & Trecker Corporation: *See—*
Zankl, Frank, 4,211,512, Cl. 409-221.000.

Keggenhoff, Berthold; Bandtel, Eberhard; and Rosenkranz, Hans J., to Bayer Aktiengesellschaft. Use of an apparatus for continuous photopolymerization. 4,211,751, Cl. 422-134.000.

Kehr, Clifton L.; Wood, Louis L.; and Guthrie, James L., to W. R. Grace & Co. Polyurethane foams and foam forming compositions containing amine scavengers. 4,211,847, Cl. 521-121.000.

Keller, John W., Jr.; Digby, Dennis; and Coombes, Alan, to Biotronik Mess- und Therapiegerate GmbH & Co. Programmer for implanted pacer. 4,211,235, Cl. 128-419.0PG.

Kellner, Jackson M., to Smith International, Inc. Drill fluid powered hydraulic system. 4,211,291, Cl. 175-17.000.

Kendall Company, The: *See—*
Anderson, Gary C.; Howey, Jon A.; and Patel, Harish A., 4,211,227, Cl. 128-296.000.
Samour, Carlos M., 4,211,595, Cl. 156-187.000.

Kendrick, Richard L. Spinal restraint device. 4,211,218, Cl. 128-87.00R.

Kennecott Copper Corporation: *See—*
Pemsler, J. Paul; and Litchfield, John K., 4,211,753, Cl. 423-54.000.
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., 4,211,270, Cl. 164-83.000.

Kennedy, Harry L.; Kesaree, Prakash M.; and Reeves, Robert H., Jr., to Velasco Scale Company. Dual fill rate liquid filler apparatus having a single control valve. 4,211,263, Cl. 141-83.000.

Kent, William C., to Western Electric Company, Incorporated. Zero insertion force connector. 4,211,458, Cl. 339-74.00R.

Kesaree, Prakash M.: *See—*
Kennedy, Harry L.; Kesaree, Prakash M.; and Reeves, Robert H., Jr., 4,211,263, Cl. 141-83.000.

Keystone Camera Corporation: *See*—
Zawodny, Arthur, 4,211,479, Cl. 354-213.000.
Kidd, Christopher: *See*—
Salmon, Peter C.; and Kidd, Christopher, 4,211,331, Cl. 211-13.000.
Kidyashev, Jury K.: *See*—
Vasilinina, Olga V.; Kidyashev, Jury K.; Potapov, Valery N.; Ryabikov, Stanislav V.; Stepanov, Anatoly M.; and Strebkov, Dmitry S., 4,211,581, Cl. 136-89.0CA.
Kieferle, Hermann: *See*—
Junginger, Klaus M.; and Kieferle, Hermann, 4,211,998, Cl. 340-171.00R.
Kiess, Ulrich: *See*—
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Kigo, Hiroyuki: *See*—
Koyama, Masaoki; and Kigo, Hiroyuki, 4,211,684, Cl. 260-29.6TA.
Kikkoman Shoyu Co., Ltd.: *See*—
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.
Kil, Ilya G.: *See*—
Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K., 4,211,626, Cl. 204-243.00M.
Kim, Georgy V.: *See*—
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.
Kimball, Bruce S.: *See*—
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Kimoto, Takahiro: *See*—
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Kimura, Hideyuki: *See*—
Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, 4,211,276, Cl. 165-1.000.
Kimura, Kunio: *See*—
Sonetaka, Kazunori; Nishino, Atsushi; and Kimura, Kunio, 4,211,672, Cl. 252-455.00R.
King, James P., to Pennwalt Corporation. Synergistic lubricating compositions. 4,211,662, Cl. 252-21.000.
Kingslake, Denis: *See*—
Benson, Nigel C.; Hughes, John M. F.; Kingslake, Denis; and Symonds, David G., 4,210,987, Cl. 26-89.000.
Kinjo, Noriyuki: *See*—
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Kinnard, Harry W. O.: *See*—
Fernandez, Alberto C., 4,211,541, Cl. 55-68.000.
Kirk, Norbert A. Hand-held peeler. 4,211,002, Cl. 30-123.300.
Kitagawa, Tsuneo: *See*—
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,211,482, Cl. 355-8.000.
Kitai, Kiyoshi; Kobayashi, Masaru; Yonemoto, Tomoo; and Kato, Shogo, to Seiko Koki Kabushiki Kaisha. Electromagnetic shutter controlling device for camera. 4,211,480, Cl. 354-234.000.
Kitamura, Hiroyuki; Hosokawa, Yorio; and Fukasawa, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Inverter apparatus. 4,212,056, Cl. 363-96.000.
Kiuchi, Mitsuyuki; and Hamaoka, Shigeo, to Matsushita Electric Industrial Co., Ltd. Induction heating apparatus. 4,211,912, Cl. 219-10.770.
Kiwala, Jacob: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.
Klein, Edmund. Method of controlling the secretion of sebum in humans. 4,211,767, Cl. 424-92.000.
Klein, Johann, to Bayer Aktiengesellschaft. Sleeve with armband. 4,211,289, Cl. 172-686.000.
Kleinewefers Gesellschaft mit beschrankter Haftung: *See*—
Meisen, Klaus, 4,211,094, Cl. 68-5.00D.
Kleinknecht, Hans P., to RCA Corporation. Optical testing of a semiconductor. 4,211,488, Cl. 356-369.000.
Kleinknecht, Hans P.; and Bosenberg, Wolfram A., to RCA Corporation. Photomask alignment system. 4,211,489, Cl. 356-400.000.
Kleisa, Kurt: *See*—
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Klinkenberg, Herbert: *See*—
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Klock, Byron V.: *See*—
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Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Abelitis, Andris, 4,211,573, Cl. 106-100.000.
Koppe, Eberhard; Schonteich, Peter; and Epper, Wolfgang, 4,211,653, Cl. 210-77.000.
Kloeber, Peter: *See*—
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Klos, Julius: *See*—
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Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., to Milliken Research Corporation. Nitrogen containing compositions. 4,211,725, Cl. 260-583.00P.
Knies, Erwin B.: *See*—
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Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., to Medtronic, Inc. Radiation signal processing system. 4,212,061, Cl. 364-414.000.
Kobayashi, Masaru: *See*—
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Kobayashi, Mikio: *See*—
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Kobayashi, Tamotsu; and Igarashi, Sadaki, to Hokushin Electric Works, Ltd. Ratio meter for capacitive-type displacement converter. 4,211,971, Cl. 324-140.00D.
Kobayashi, Tsuguo: *See*—
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Koda, Minoru, to Matsushita Electrical Industrial Co., Ltd. VTR Tape drive system. 4,212,039, Cl. 360-73.000.
Koenig & Bauer Aktiengesellschaft: *See*—
Michalik, Horst B.; and Weschenfelder, Otto T., 4,211,396, Cl. 270-13.000.
Koenig, Burton G. Fishing apparatus. 4,210,984, Cl. 24-201.0HE.
Koga, Isao: *See*—
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Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, to Daimler-Benz Aktiengesellschaft. Battery vent and filler opening structure. 4,211,831, Cl. 429-78.000.
Kohnlein, Hans: *See*—
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Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, to Hitachi Medical Corporation. Tomographic imaging system. 4,212,062, Cl. 364-414.000.
Kohno, Hideki: *See*—
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Kohno, Mitsuo: *See*—
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Kohyama, Susumu, to Tokyo Shibaura Electric Co., Ltd. Multi-channel charge coupled transfer device. 4,211,937, Cl. 307-221.00D.
Koike, Wataro; Kimoto, Takahiro; and Matsui, Sadayoshi, to Ihara Chemical Industry Co., Ltd. Process for producing chlorosulfonylbenzoylchloride. 4,211,723, Cl. 260-544.00K.
Koiso, Junichi: *See*—
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Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, to Kajima Kensetsu Kabushiki Kaisha. Building structure. 4,211,045, Cl. 52-251.000.
Kokaku, Hiroyoshi: *See*—
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Kokie, Norio; Kubo, Masaharu; and Nagahara, Shusaku, to Hitachi, Ltd. Solid-state image pickup device. 4,212,034, Cl. 358-213.000.
Kokiso, Masakazu: *See*—
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Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,036, Cl. 358-261.000.
Wakabayashi, Hiroharu, 4,211,920, Cl. 455-601.000.
Kollmeier, Hans-Joachim; and Rossmy, Gerd, to Th. Goldschmidt AG. Process of producing cross-linked urethane-group comprising foams of open-cell structure. 4,211,849, Cl. 521-164.000.
Koltgen, Hermann. Devices for inspecting bores. 4,211,014, Cl. 33-178.00R.

Komarek, Ernst: *See*—
Spahrkas, Heinrich; Muller, Josef; Komarek, Ernst; and Luck, Wolfhard, 4,211,529, Cl. 8-94.260.
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, to Mitsubishi Gas Chemical Company, Inc. Process for producing terephthalic acid. 4,211,882, Cl. 562-416.000.
Komizo, Toshiyuki: *See*—
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Kongo Co., Ltd.: *See*—
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Konig, Helmut; and Schnider, Karl, to Maschinenfabrik Dipl. Ing. Helmut Konig. Dough portioning machine. 4,211,492, Cl. 366-76.000.
Konig, Wilfried: *See*—
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Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,211,835, Cl. 430-403.000.
Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, 4,211,558, Cl. 430-359.000.
Konkler, Anthony W.: *See*—
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Konno, Tetsuro: *See*—
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Konovenko, Grigory M.; Slipchenko, Svetlana L.; Markus, Vladimir M.; and Kasjura, Nina N. Adhesive composition. 4,211,685, Cl. 260-30.4EP.
Koppe, Eberhard; Schonteich, Peter; and Epper, Wolfgang, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method for vacuum filtration. 4,211,653, Cl. 210-77.000.
Koppl, Franz: *See*—
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Koreicho, Wladimir, to Societe Anonyme de Telecommunications. Device for suppressing very close interference echo signals in optical pulse compression radars. 4,211,485, Cl. 356-5.000.
Kortenbusch, Werner, to Ruhrkohle AG. Method and arrangement for hydraulic conveying of solids. 4,211,518, Cl. 417-54.000.
Kortier, William E.; Mueller, John J.; and Eggers, Philip E., to United States of America, Energy. Thermoelectric module. 4,211,889, Cl. 136-237.000.
Kos, Jacob J.: *See*—
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Kosek, Jerzy: *See*—
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Kosheiev, Alexandr G.; Kretov, Svyatoslav D.; and Lavrentiev, Konstantin A. Device for recovering video information from magnetic tape. 4,212,042, Cl. 360-108.000.
Kosonocky, Walter F.; and Sauer, Donald J., to RCA Corporation. CCD Gate electrode structures and systems employing the same. 4,211,936, Cl. 307-221.00D.
Kostner, Gerhard M.: *See*—
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Kotobuki Sangyo Kabushiki Kaisha: *See*—
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Kotthaus, Erich, to Werkzeugmaschinenfabrik Oerlikon-Buhrle. Method of manufacturing pairs of spur gears. 4,211,511, Cl. 409-26.000.
Koyama, Masaoki; and Kigo, Hiroyuki, to Asahi-Dow Limited. Vinylidene chloride polymer latex. 4,211,684, Cl. 260-29.6TA.
Koyanagi, Osamu: *See*—
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Krahl, Alfred: *See*—
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Kramer, Wilhelm, to BBC Brown Boveri & Company Limited. Method and apparatus for producing dry, compressed air for electrical switch gear. 4,211,542, Cl. 55-179.000.
Kranc, Stanley J., to Caterpillar Tractor Co. Timing control for sleeve metering fuel system. 4,211,520, Cl. 417-494.000.
Kraska, Allen R., to Pfizer Inc. N,N-Disubstituted aminomethylphenylethanolamines. 4,211,794, Cl. 424-330.000.
Krauss-Maffei Aktiengesellschaft: *See*—
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Kress, Dieter; and Haberle, Friedrich, to MAPAL Fabrick fur Prazicnswerkzeuge Dr. Kress KG. Rotary cutting tool with radially adjustable, reversible tool bits. 4,211,507, Cl. 407-37.000.
Kresse, Peter: *See*—
Hund, Franz; Linde, Gunter; and Kresse, Peter, 4,211,565, Cl. 106-14.050.
Kretov, Svyatoslav D.: *See*—
Kosheiev, Alexandr G.; Kretov, Svyatoslav D.; and Lavrentiev, Konstantin A., 4,212,042, Cl. 360-108.000.
Kreuzer, Franz-Heinrich: *See*—
Marquardt, Klaus; and Kreuzer, Franz-Heinrich, 4,211,729, Cl. 525-106.000.
Krieger, Raymond L., to B. K. Sweeney Manufacturing Company. Gear puller. 4,210,990, Cl. 29-263.000.
Krinsky, Martin S. Orthopedic cushion and method for fitting thereof. 4,211,236, Cl. 128-594.000.
Krisch, Burkhard: *See*—
Muller, Karl-Heinz; Krisch, Burkhard; Rindfleisch, Volker; and Neuendorff, Hans F. R., 4,211,924, Cl. 250-311.000.
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Krogerus, Helge J.: *See*—
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.
Krylov, Nikolai I.; Toder, Ilya A.; Danilov, Leonid I.; and Pinsky, Gennady I. Mill stand roll assembly. 4,211,101, Cl. 72-247.000.
Kubach, John S.; and Stanley, Richard D. Filter venting devices for ostomy appliances. 4,211,224, Cl. 128-283.000.
Kubik, Peter S.: *See*—
Alles, Harold G.; and Kubik, Peter S., 4,211,012, Cl. 33-18.00R.
Kubo, Masaharu: *See*—
Kokie, Norio; Kubo, Masaharu; and Nagahara, Shusaku, 4,212,034, Cl. 358-213.000.
Kubota, Ltd.: *See*—
Tanaka, Tomio; and Yamano, Rinzo, 4,211,298, Cl. 180-75.000.
Kudara, Hajime: *See*—
Matsuda, Sumio; and Kudara, Hajime, 4,211,566, Cl. 106-16.000.
Kudlaty, Paul R.: *See*—
Carp, Ralph W.; Weissler, Harold E., II; and Kudlaty, Paul R., 4,212,066, Cl. 364-431.000.
Kuhle, Engelbert: *See*—
Hartmann, Alfons; Kuhle, Engelbert; and Hammann, Ingeborg, 4,211,790, Cl. 424-285.000.
Kuhlmann, George E.: *See*—
Horsfield, Sydney G.; Kuhlmann, George E.; and Bemis, Alan G., 4,211,881, Cl. 562-416.000.
Kuhlthau, Hans-Peter; Psaar, Hubertus; and Raue, Roderich, to Bayer Aktiengesellschaft. Pressure-sensitive recording material. 4,211,436, Cl. 282-27.500.
Kuhne, Robert: *See*—
Baumgartner, Peter; and Kuhne, Robert, 4,211,192, Cl. 123-90.600.
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Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.
Kulik, George J., to Abex Corporation. Anti-rotational lamp assembly. 4,212,051, Cl. 362-287.000.
Kunimune, Kohichi; Inadomi, Seigo; and Yoshida, Satomi, to Chisso Corporation. Heat-melt adhesive propylene polymer fibers. 4,211,819, Cl. 428-374.000.
Kunka, Bernard P.; and Simonelic, George B., to Interlake, Inc. Wire stitching machine. 4,211,350, Cl. 227-8.000.
Kuno, Shiro; and Nishimura, Yoshiharu, to Tokyo Electric Co., Ltd. Weight measuring method and apparatus thereof. 4,212,074, Cl. 364-567.000.
Kuramshin, Ravil S.: *See*—
Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U., 4,211,916, Cl. 371-15.000.
Kurata, Kazuhiro: *See*—
Ono, Yuichi; Mori, Mitsuhiro; Morioka, Makoto; Ito, Kazuhiro; Kawata, Masahiko; and Kurata, Kazuhiro, 4,212,021, Cl. 357-17.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Obata, Kanichiro; Kokubu, Yoshikazu; and Okazaki, Isao, 4,211,628, Cl. 204-252.000.
Kurfman, Virgil B.; and Gransden, Raymond E., Jr., to Dow Chemical Company, The. Highly reflective multilayer metal/polymer composites. 4,211,822, Cl. 428-412.000.
Kurihara, Kazuhiko: *See*—
Yazawa, Masahide; and Kurihara, Kazuhiko, 4,211,807, Cl. 428-109.000.
Kuroda, Hiroyuki: *See*—
Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, 4,211,866, Cl. 536-53.000.
Kuroda, Masahiro, to Anritsu Electric Company, Limited. Local signal generation arrangement. 4,211,975, Cl. 455-75.000.
Kusakari, Naohiko: *See*—
Wada, Osamu; and Kusakari, Naohiko, 4,211,858, Cl. 528-272.000.
Kusumoto, Shoichi: *See*—
Atoji, Nobuhisa; Matsumoto, Takashi; Kusumoto, Shoichi; Sato, Kazue; and Hasegawa, Mitsuhiro, 4,211,898, Cl. 179-156.00R.

Kusumoto, Yasuo; and Miyazaki, Joichi, to Kabushiki Kaisha Daini Seikosha. Stop watch. 4,211,066, Cl. 368-113.000.

Kusunoki, Shigeru; and Tanaka, Junzo, to Matsushita Electric Industrial Co., Ltd. High frequency heating apparatus with improved door arrangement. 4,211,910, Cl. 219-10.55D.

Kutlik, Edward: *See*—
Hellstrom, Melbourne J.; Perlin, Allen I.; and Kutlik, Edward, 4,211,927, Cl. 250-445.00T.

Kuur, Vyacheslav P.: *See*—
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Kvita, Vratislav: *See*—
Roth, Martin; Kvita, Vratislav; and Greber, Gerd, 4,211,705, Cl. 260-326.00C.

Kwasnoski, Daniel; and Symons, Carl R., to Bethlehem Steel Corporation. Coke pushing emission control system. 4,211,608, Cl. 201-41.000.

Kyoya, Kazuhiro: *See*—
Tsuchiya, Yoichiro; and Kyoya, Kazuhiro, 4,211,356, Cl. 229-16.00R.

Laboratoires Sarget: *See*—
Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, 4,211,772, Cl. 424-180.000.

Lafferty, Robert M., to Agroferm AG. Processes for the manufacture of D(-)-3-hydroxybutyric acid and D(-)-3-hydroxybutyric acid producing mutants. 4,211,846, Cl. 435-141.000.

Lafon, Guy. Dispensing machine, in particular for coins. 4,211,248, Cl. 133-1.00R.

Laing, Karsten: *See*—
Ludin, Ludwig; Laing, Nicholaus; Laing, Oliver; and Laing, Karsten, 4,211,092, Cl. 62-499.000.

Laing, Nicholaus: *See*—
Ludin, Ludwig; Laing, Nicholaus; Laing, Oliver; and Laing, Karsten, 4,211,092, Cl. 62-499.000.

Laing, Oliver: *See*—
Ludin, Ludwig; Laing, Nicholaus; Laing, Oliver; and Laing, Karsten, 4,211,092, Cl. 62-499.000.

L'Air Liquide, Societe Anomyme pour l'Etude et l'Explotion des Procedes: *See*—
L'Hermite, Mathurin; and Pierrard, Francois, 4,211,584, Cl. 148-16.700.

L'Air Liquide, Societe Anonyme pour l'Etude et L'Expoitation des Procedes Georges Claude: *See*—
Bentz, Gerard; Galey, Jean; and Devalois, Serge, 4,211,269, Cl. 164-67.000.

Lambert, Norman A.: *See*—
Getchell, Williams G.; and Lambert, Norman A., 4,211,387, Cl. 251-335.00B.

Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, to Bison-Werke, Bahre & Greten GmbH & Co. KG. Oscillating circuit arrangements for high frequency industrial generators. 4,211,984, Cl. 331-97.000.

Lang, Stanley A., Jr.: *See*—
Lin, Yang-I; and Lang, Stanley A., Jr., 4,211,726, Cl. 568-424.000.

Lange, Gerhard, to Wafios, Maschinenfabrik, Wagner, Ficker & Schmid (GmbH & Co. KG). Chain welding machine. 4,211,068, Cl. 59-31.000.

Langhoff, Josef: *See*—
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.

Langseder, Neal E., to American Can Company. Fracture resistant retained lever tab and method of manufacture. 4,211,335, Cl. 220-269.000.

Lanter, Kent J.; Betz, Norman L.; and Williams, Danny L., to Ralston Purina Company. Feed intake limiting composition for cattle. 4,211,796, Cl. 426-2.000.

Lapadula, Constantino; and Lin, Burn J., to International Business Machines Corporation. Method of using a o-quinone diazide sensitized phenol-formaldehyde resist as a deep ultraviolet light exposure mask. 4,211,834, Cl. 430-326.000.

Larin, Valentin F.: *See*—
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.

Larsen, Robert T., to Outboard Marine Corporation. Lawn mower including a carburetor enclosure. 4,211,058, Cl. 56-17.500.

Larsen, Russell E. Game board and apparatus. 4,211,419, Cl. 273-248.000.

Laurel Bank Machine Co., Ltd.: *See*—
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, 4,211,052, Cl. 53-77.000.

Lautenschlager, Horst: *See*—
Lautenschlager, Karl, Jr.; Lautenschlager, Horst; and Lautenschlager, Reinhard, 4,210,980, Cl. 16-171.000.

Lautenschlager, Karl, Jr.; Lautenschlager, Horst; and Lautenschlager, Reinhard, to Karl Lautenschlager KG Mobelbeschiageabrik. Cabinet hinge, especially for period furniture. 4,210,980, Cl. 16-171.000.

Lautenschlager, Reinhard: *See*—
Lautenschlager, Karl, Jr.; Lautenschlager, Horst; and Lautenschlager, Reinhard, 4,210,980, Cl. 16-171.000.

Lava Crucible Refractories, Co.: *See*—
Miller, Eldon D., 4,211,554, Cl. 75-53.000.

Lavrentiev, Konstantin A.: *See*—
Koshelev, Alexandr G.; Kretov, Svyatoslav D.; and Lavrentiev, Konstantin A., 4,212,042, Cl. 360-108.000.

Lawford, William H.: *See*—
Saxton, William R.; and Lawford, William H., 4,211,605, Cl. 162-64.000.

Lawson, John E., to Armco, Inc. Articulated plural well deep water production system. 4,211,281, Cl. 166-345.000.

Lazzari, Jean-Pierre; and Helle, Michel, to Compagnie Internationale pour l'Informatique. Apparatus and method for removing the effect of interference magnetic fields in a magnetic transducer device for detecting information magnetically coded on a carrier. 4,212,041, Cl. 360-113.000.

Leboucq, Jacques: *See*—
Desplanches, Gerard; and Leboucq, Jacques, 4,211,570, Cl. 106-65.000.

Lee, Chien-Ping: *See*—
Yariv, Amnon; Margalit, Shlomo; and Lee, Chien-Ping, 4,212,020, Cl. 357-17.000.

Lee, Hop. Electric outlet box containing twin electric sockets. 4,211,464, Cl. 339-122.00R.

Lee, Kee D.: *See*—
Choi, Sam K.; and Lee, Kee D., 4,211,859, Cl. 528-275.000.

Lee, Thomas B. K., to American Hoechst Corporation. Method of preparation of isopropyl 4,10-dihydro-10-oxothieno[3,2-c][1]benzoxepin-8-acetate. 4,211,877, Cl. 549-44.000.

Lee, Wooyoung: *See*—
Garwood, William E.; and Lee, Wooyoung, 4,211,640, Cl. 208-255.000.
Gross, Benjamin; and Lee, Wooyoung, 4,211,636, Cl. 208-164.000.
Gross, Benjamin; and Lee, Wooyoung, 4,211,637, Cl. 208-164.000.

Le Goff, Denis, to Compagnie Generale d'Electricite. Ultra-rapid electro-optical shutter. 4,211,474, Cl. 350-356.000.

Legros, Francis R.; and Tourman, Alain L. Device for aerating and chemically activating shower water. 4,211,368, Cl. 239-315.000.

Lehmann, Joachim: *See*—
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.

Leigh Products, Inc.: *See*—
Crescenzi, Donald; and Bridges, Barry A., 4,211,322, Cl. 206-44.00R.

Lemelson, Jerome H. Method for scanning a card with video signal. 4,212,037, Cl. 360-33.000.

Lemoine, Maurice G., to Ampex Corporation. Time base compensator. 4,212,027, Cl. 358-8.000.

Lenne, William: *See*—
Bourset, Claude; and Lenne, William, 4,211,384, Cl. 249-160.000.

Lenselink, Willem, to Polak's Frutal Works B.V. Cyclic acetals and ketals and their use in perfume compositions. 4,211,674, Cl. 252-522.00R.

Leonard, Henri, to Micro-Mega S.A. Dental handpiece. 4,211,009, Cl. 32-27.000.

Leonard, Rex D.; and Hulstyn, Jan, to Beatrice Foods Company. Cryogenic breathing system. 4,211,086, Cl. 62-50.000.

Leppin, Jurgen: *See*—
Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,211,984, Cl. 331-97.000.

Lerma, Jesse P., to Abbott Laboratories. Integrator with dielectric absorption correction. 4,211,981, Cl. 328-127.000.

Lerman, Martin D. Oral device. 4,211,008, Cl. 433-229.000.

Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, to Institut National de la Recherche Agronomique and Aussedat-Rey. Animal feeds. 4,211,795, Cl. 426-2.000.

Lessig, John A.: *See*—
Hoffman, Paul H.; and Lessig, John A., 4,210,982, Cl. 17-48.000.

Lever Brothers Company: *See*—
Machin, David, 4,211,675, Cl. 252-557.000.
Petranyi, Pal I., 4,211,328, Cl. 206-525.000.

Lewellen, Philip C.; Gates, Walter C., Jr.; and Duranleau, Roger G., to Texaco Inc. Catalytic metal-rare earth metal hydride for reduction of carbon monoxide in hydrogen. 4,211,673, Cl. 252-462.000.

LGZ Landis & Gyr Zug AG: *See*—
Nyfeler, Alex; Greenaway, David L.; and Lienhard, Heinz, 4,211,918, Cl. 235-454.000.

L'Hermite, Mathurin; and Pierrard, Francois, to L'Air Liquide, Societe Anomyme pour l'Etude et l'Explotion des Procedes. Methods of heat-treating steel. 4,211,584, Cl. 148-16.700.

Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Beneking, Heinz, 4,212,022, Cl. 357-22.000.
Glitz, Ekkehard, 4,211,891, Cl. 375-2.000.
Karrenbauer, Herbert, 4,211,904, Cl. 200-148.00A.
Podlewski, Johann, 4,212,055, Cl. 363-71.000.
Schmitt, Alfons; Utz, Diether; and Schafer, Klaus, 4,212,031, Cl. 358-101.000.

Lienhard, Heinz: *See*—
Nyfeler, Alex; Greenaway, David L.; and Lienhard, Heinz, 4,211,918, Cl. 235-454.000.

Lifeline Products, Inc.: *See*—
Marshall, James J., 4,211,842, Cl. 435-210.000.

Lilja, Launo L.: *See*—
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.

Lillegard, Thomas R.; Rollins, Richard A.; and Stauber, Ronald C., to Baxter Travenol Laboratories, Inc. Universal hospital bracket. 4,211,380, Cl. 248-229.000.

Lillibridge, Harold R., to Champion International Corporation. Air cleaning apparatus. 4,210,977, Cl. 15-306.00R.

Lin, Burn J.: *See*—
Lapadula, Constantino; and Lin, Burn J., 4,211,834, Cl. 430-326.000.

Lin, Edward D. Urethral catheter. 4,211,233, Cl. 128-349.00B.

Lin, Yang-I; and Lang, Stanley A., Jr., to American Cyanamid Company. Synthesis of substituted 9,10-anthracene-dicarboxaldehydes and 9,10-dihydro-9,10-anthracenedicarboxaldehydes. 4,211,726, Cl. 568-424.000.

Lindblom, Kenneth A.: *See*—
Eppstein, Lee B.; Kroeger, James K.; and Lindblom, Kenneth A., 4,211,614, Cl. 204-1.00T.

Linde Aktiengesellschaft: *See*—
Springmann, Helmut, 4,211,544, Cl. 62-30.000.

Linde, Gunter: *See*—
Hund, Franz; Linde, Gunter; and Kresse, Peter, 4,211,565, Cl. 106-14.050.

Lindgens, Theodor: *See*—
Wittkopp, Helmut; vom Dorp, Heinz; and Lindgens, Theodor, 4,211,129, Cl. 82-1.00C.

Lindner, Friedrich, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Container for a heat storage medium. 4,211,208, Cl. 126-400.000.

Lindo, Calvin E. Golf club combined with foldable extensions for surveying greens. 4,211,415, Cl. 273-162.00B.

Lindstrom, Carl H. M.: *See*—
Hallberg, Rolf O.; Lindstrom, Carl H. M.; and Westerberg, Hakan, 4,211,615, Cl. 204-1.00T.

Lineberry, Cletus E.: *See*—
Buckner, John G.; Lineberry, Cletus E.; and Harris, Jimmy W., 4,211,130, Cl. 83-23.000.

L'Institut Armand-Frappier: *See*—
Dubreuil, Robert, deceased; Ast, Orvo; and Pavilanis, Vytautas, 4,211,843, Cl. 435-2.000.

Lipps, Bennie J.; Murphy, William P., Jr.; and Mather, Frank W., III, to Cordis Dow Corp. Method for making artificial kidney. 4,211,597, Cl. 156-245.000.

Lipschutz, Paul, to Neiman S.A. Security lock with pistons and cylindrical key. 4,211,096, Cl. 70-364.00R.

Lisiecki, Robert E., to Ex-Cell-O Corporation. Container and blank for constructing same. 4,211,357, Cl. 229-17.00G.

List, Ferdinand; Klos, Julius; and Alfs, Helmut, to Chemische Werke Huls Aktiengesellschaft. Method and apparatus for the metered conveying of pulverulent solids. 4,211,506, Cl. 406-55.000.

Litchfield, John K.: *See*—
Pemsler, J. Paul; and Litchfield, John K., 4,211,753, Cl. 423-54.000.

Lo, Roger: *See*—
Twardy, Harald; and Lo, Roger, 4,211,072, Cl. 60-203.000.

Lochner, Herbert, to Cikalon Vliesstoffwerk GmbH. Method of making a needled and ornamentally patterned fleece material. 4,211,593, Cl. 156-148.000.

Lockhart, David A., to Caterpillar Tractor Co. Laminated spacer plate for engines and method for making the same. 4,211,205, Cl. 123-193.0CH.

Lodhi, Shahid A.; and Sims, Bernard, to American Cyanamid Company. Triethyl citrate solutions of PGE-type compounds. 4,211,793, Cl. 424-305.000.

Loew, Frederic C.: *See*—
Civardi, Frank P.; and Loew, Frederic C., 4,211,806, Cl. 428-91.000.

Lombard, Claude; and Viala, Guy, to Regie Nationale des Usines Renault. Magnet-controlled switch. 4,211,991, Cl. 335-207.000.

Long, Marshall; Alley, Lewis F.; and White, James E., to Marlen Research Corporation. Machine for feeding, cutting, spacing and accumulating articles. 4,211,055, Cl. 53-517.000.

Lonza, Ltd.: *See*—
Catalucci, Enrico, 4,211,883, Cl. 562-433.000.

Lopez, Carlos; Watanabe, Kyoichi A.; Reichman, Uri; and Fox, Jack J., to Sloan Kettering Institute for Cancer Research. 5-Substituted 1-(2'-Deoxy-2'-substituted-β-D-arabinofuranosyl)pyrimidine nucleosides. 4,211,773, Cl. 424-180.000.

LoPiano, Rocco W. Pulsed oxygen chamber. 4,211,223, Cl. 128-207.260.

L'Oreal: *See*—
Gueret, Jean-Louis H., 4,211,217, Cl. 128-67.000.

Lorenz, David R.: *See*—
McDonald, Patrick D.; Vivilecchia, Richard V.; and Lorenz, David R., 4,211,658, Cl. 210-198.00C.

Lotscher, Bernhard. Scale. 4,211,296, Cl. 177-211.000.

Louisiana State University Board of Supervisors: *See*—
Steelman, Carrol D.; and Chambers, Doyle M., 4,211,778, Cl. 424-244.000.

Lubbock, Frederick J.: *See*—
Dixon, David R.; Lydiate, Jack; and Lubbock, Frederick J., 4,211,664, Cl. 252-62.540.

Luck, Wolfhard: *See*—
Spahrkas, Heinrich; Muller, Josef; Komarek, Ernst; and Luck, Wolfhard, 4,211,529, Cl. 8-94.260.

Ludecke, Otto A.; and Rosebrock, Theodore L., to General Motors Corporation. Diesel engine exhaust particulate filter with intake throttling incineration control. 4,211,075, Cl. 60-285.000.

Ludin, Ludwig; Laing, Nicholaus; Laing, Oliver; and Laing, Karsten. Space heating installation. 4,211,092, Cl. 62-499.000.

Luenser, Kurt K., to Verson Allsteel Press Company. Solid state control system for mechanical press. 4,211,098, Cl. 72-21.000.

Lupertz, Hans-Henning, to ITT Industries, Incorporated. Spot-type disc brake. 4,211,310, Cl. 188-73.300.

Lustig, Stanley; and Vasudevan, Ganapathy, to Union Carbide Corporation. Method of fabricating tubular casing for processed foods. 4,211,596, Cl. 156-244.120.

Luttringer, Jean P., to Ciba-Geigy Corporation. Process for dyeing polyester materials. 4,211,527, Cl. 8-526.000.

Lydiate, Jack: *See*—
Dixon, David R.; Lydiate, Jack; and Lubbock, Frederick J., 4,211,664, Cl. 252-62.540.

Lynch, Robert J.: *See*—
Hughes, Peter I.; Lynch, Robert J.; and Ahrens, James J., 4,211,343, Cl. 222-130.000.

Machin, David, to Lever Brothers Company. Detergent bars with improved slip properties. 4,211,675, Cl. 252-557.000.

Machines Chambon: *See*—
Corse, Louis G., 4,211,167, Cl. 101-148.000.

Mack Corporation: *See*—
Mack, James F., 4,211,123, Cl. 74-99.00A.

Mack, James F., to Mack Corporation. Motion conversion mechanism. 4,211,123, Cl. 74-99.00A.

Madden, James J., to Bell Telephone Laboratories, Incorporated. Circuit board interconnection apparatus. 4,211,459, Cl. 339-75.0MP.

Magnussen, Haakon T., Jr.; and Moeller, Roy P., to Altex Scientific, Inc. Spectrophotometer. 4,211,486, Cl. 356-328.000.

Magyar Vagon-es Gepgyar: *See*—
Szabo, Imre Z.; Nagy, Kornel; and Finta, Csaba, 4,211,105, Cl. 73-11.000.

Makinen, Juho K.: *See*—
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.

Makrutzki, Dieter: *See*—
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.

Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, to Centre Technique de l'Industrie Horiogere "Ceterhor" Laboratoire d'Electrochimie-Faculte des Sciences et des Techniques. Electro-optic display device using a vitreous solid ion-conductive material. 4,211,475, Cl. 350-357.000.

Manchester, Donald F.: *See*—
Zajic, James E.; Hill, Martha A.; Manchester, Donald F.; and Muzika, Karel, 4,211,645, Cl. 210-7.000.

Mangano, Joseph A.: *See*—
Daugherty, Jack D.; Jacob, Jonah H.; and Mangano, Joseph A., 4,211,983, Cl. 331-94.5PE.

Mannesmann Aktiengesellschaft: *See*—
Schrewe, Hans; and Pleschiutschnigg, Fritz-Peter, 4,211,272, Cl. 164-89.000.

Manoogian, David V.; and Procaccino, Roderic J., to Raytheon Company. Continuous wave radar. 4,212,012, Cl. 343-7.00A.

MAPAL Fabrick fur Prazisicnswerkzeuge Dr. Kress KG: *See*—
Kress, Dieter; and Haberle, Friedrich, 4,211,507, Cl. 407-37.000.

Marascalco, Lewis C.: *See*—
Segar, Richard B.; and Marascalco, Lewis C., 4,212,079, Cl. 364-900.000.

March, Rene: *See*—
Dougherty, Robert S.; Hirsch, Walter; and March, Rene, 4,211,057, Cl. 56-10.200.

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Drewery, John O., 4,212,028, Cl. 358-11.000.
Smith, Robin, 4,211,982, Cl. 328-138.000.

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Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

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Konovenko, Grigory M.; Slipchenko, Svetlana L.; Markus, Vladimir M.; and Kasjura, Nina N., 4,211,685, Cl. 260-30.4EP.

Marlen Research Corporation: *See*—
Long, Marshall; Alley, Lewis F.; and White, James E., 4,211,055, Cl. 53-517.000.

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Quick, David C.; and Marsch, James E., 4,211,313, Cl. 192-4.00A.
Marshall, David L.; and Herndon, William C., to Dow Chemical Company, The. Anion exchange resin in the determination of thyroid function. 4,211,763, Cl. 424-1.000.
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Eakman, James M.; Marshall, Harry A.; and Kalina, Theodore, 4,211,669, Cl. 252-373.000.
Marshall, James J., to Lifeline Products, Inc. Starch-degrading benzymes derived from *Clacosporium resinae*. 4,211,842, Cl. 435-210.000.
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Martin, Charles W.; and Ward, Eldon L., to Dow Chemical Company, The. Bis(dithiocarbamate) salts. 4,211,784, Cl. 424-267.000.
Martin, Lloyd E. Portable cable spooler for wells. 4,211,376, Cl. 242-86.50R.
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Marvin Glass & Associates: *See*—
Morrison, Howard J.; Gardner, Denise; and Schoenfield, Palmer J., 4,211,030, Cl. 46-67.000.
Maschinenfabrik Dipl. Ing. Helmut Konig: *See*—
Konig, Helmut; and Schnider, Karl, 4,211,492, Cl. 366-76.000.
Mashita, Kentaro: *See*—
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.
Maskens, Geoffrey D., to Quest Automation Limited. Guideo carriage assembly for photodrafting equipment. 4,212,049, Cl. 362-33.000.
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Dougherty, Robert S.; Hirsch, Walter; and March, Rene, 4,211,057, Cl. 56-10.200.
Massey, Frederick, to Tioxide Group Limited. Flexible container with discharge tube. 4,211,266, Cl. 150-1.000.
Massies, Jean; and Nuyen, Tronc L., to Thomson-CSF. Process for producing a metal to compound semiconductor contact having a potential barrier of predetermined height. 4,211,587, Cl. 148-187.000.
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Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, 4,211,475, Cl. 350-357.000.
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Suzuki, Nobuo; Sashihara, Kenji; and Masuda, Takao, 4,211,839, Cl. 430-619.000.
Masuhara, Eiichi: *See*—
Suminoe, Taro; Ito, Tetsuo; and Masuhara, Eiichi, 4,211,682, Cl. 260-29.300.
Masuzawa, Sigeaki: *See*—
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,211,892, Cl. 179-1.0SM.
Material Control, Inc.: *See*—
Sweet, Donald B., 4,211,966, Cl. 318-482.000.
Mather, Frank W., III: *See*—
Lipps, Bennie J.; Murphy, William P., Jr.; and Mather, Frank W., III, 4,211,597, Cl. 156-245.000.
Matsuda, Akira; Tojo, Tetsuo; and Iwata, Kazuo, to Mitsui Petrochemical Industries Ltd. Thermoplastic olefin resin composition and laminated film or sheet thereof. 4,211,852, Cl. 525-240.000.
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, to Bridgestone Tire Company Limited; and Mitaka Instrument Company Limited. Pressure sensing switch with conductive deflectable diaphragm. 4,211,901, Cl. 200-83.00B.
Matsuda, Hiromi: *See*—
Ueyama, Takehiko; Nishizawa, Masahiro; Odaka, Yoshiyuki; and Matsuda, Hiromi, 4,211,477, Cl. 354-1.000.
Matsuda, Sumio; and Kudara, Hajime, to Chugoku Marine Paints Ltd. Antifouling method. 4,211,566, Cl. 106-16.000.
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Koike, Wataro; Kimoto, Takahiro; and Matsui, Sadayoshi, 4,211,723, Cl. 260-544.00K.
Matsui, Takashi: *See*—
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,211,550, Cl. 71-89.000.
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Atoji, Nobuhisa; Matsumoto, Takashi; Kusumoto, Shoichi; Sato, Kazue; and Hasegawa, Mitsuhiro, 4,211,898, Cl. 179-156.00R.
Matsumura, Hiromu: *See*—
Narisada, Masayuki; Tsuji, Teruji; Matsumura, Hiromu; and Nagata, Wataru, 4,211,779, Cl. 424-246.000.
Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, to Nippon Shinyaku Co., Ltd.; and Takara Shuzo Co., Ltd. Acyl derivatives of 2-[3-(2-chloroethyl)-3-nitrosoureido]-2-deoxy-D-glucopyranose. 4,211,866, Cl. 536-53.000.
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Oda, Hajime; Samejima, Toshihide; Matsumura, Toshio; Moritani, Nakanobu; and Fujita, Masanori, 4,211,067, Cl. 368-185.000.
Matsuo, Syunji: *See*—
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Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,211,552, Cl. 75-24.000.
Matsushima, Shunsuke: *See*—
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.
Matsushima, Tetsuo: *See*—
Andow, Fumio; Matsushima, Tetsuo; and Okamoto, Eiichi, 4,212,046, Cl. 361-80.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Akiyama, Ryo; and Igarashi, Yoshiaki, 4,211,967, Cl. 318-490.000.
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Kiuchi, Mitsuyuki; and Hamaoka, Shigeo, 4,211,912, Cl. 219-10.770.
Kusunoki, Shigeru; and Tanaka, Junzo, 4,211,910, Cl. 219-10.55D.
Minami, Shunji, 4,211,940, Cl. 307-251.000.
Oda, Hiroshi, 4,211,994, Cl. 338-21.000.
Sonetaka, Kazunori; Nishino, Atsushi; and Kimura, Kunio, 4,211,672, Cl. 252-455.00R.
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Koda, Minoru, 4,212,039, Cl. 360-73.000.
Matsuura, Shigeo; Akutsu, Eisaku; and Miyamoto, Hiroshi, to Hitachi, Ltd. Search tuning system for television receiver. 4,211,988, Cl. 334-16.000.
Matthews, Carl; and de Recourt Martyn, Elizabeth. Sound absorbing device. 4,211,302, Cl. 181-248.000.
Matthews, Carl; and de Recourt Martyn, Elizabeth. Sound absorbing device. 4,211,303, Cl. 181-248.000.
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Bordini, Fosco; and Mauri, Luigi, 4,211,811, Cl. 428-220.000.
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Peterson, Marvin L.; and Maxson, Orwin G., 4,211,503, Cl. 405-216.000.
May, Randall L. Adjustable pitch drum. 4,211,144, Cl. 84-411.00A.
Mayers, Richard R.; Huebner, Steven R.; and Chojnacki, Dennis A., to Midland-Ross Corporation. Internal cooling of heat exchanger tubes. 4,211,088, Cl. 62-64.000.
MCA Disco-Vision, Inc.: *See*—
Hunyar, Csaba K., 4,211,617, Cl. 204-5.000.
McCafferty, Donald F., to Orthopedic Contour Systems, Inc. Accommodative foot bed. 4,211,019, Cl. 36-43.000.
McCarter, Ed R.: *See*—
Thatcher, Arthur K.; and McCarter, Ed R., 4,211,199, Cl. 123-445.000.
McClelland, Robert D.: *See*—
Baird, David B.; Costello, Alan T.; Fishwick, Brian R.; McClelland, Robert D.; and Smith, Peter, 4,211,696, Cl. 260-152.000.
McCloy, Albert J.: *See*—
Bennett, Moreland P.; Cacalloro, Philip A.; and McCloy, Albert J., 4,211,278, Cl. 165-130.000.
McCorsley, Clarence C., III; and Varga, Julianna K., to Akzona Incorporated. Process for making a solid impregnated precursor of a solution of cellulose. 4,211,574, Cl. 106-163.00R.
McCutchen, Hugh L.; and Bess, James W., Sr., to Diamond Shamrock Corporation. Anode and base assembly for electrolytic cells. 4,211,629, Cl. 204-252.000.
McDaniel, Charles E.; and McDaniel, Yvonne. Apparatus for electromagnetically generating fields for repelling or attracting permanent magnetic fields for the purpose of entertainment. 4,211,411, Cl. 273-345.000.
McDaniel, Max P.; Hottovy, John D.; and Welch, Melvin B., to Phillips Petroleum Company. Polymer slurry catalyst residue deactivation. 4,211,863, Cl. 528-483.000.
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McDaniel, Charles E.; and McDaniel, Yvonne, 4,211,411, Cl. 273-345.000.
McDonald, Bill W.: *See*—
Johanson, Ronald C.; and McDonald, Bill W., 4,211,385, Cl. 249-192.000.
McDonald, Patrick D.; Vivilecchia, Richard V.; and Lorenz, David R., to Waters Associates, Inc. Triaxially compressed packed beds. 4,211,658, Cl. 210-198.00C.
McDowell-Wellman Company: *See*—
Hamilton, Wallace, 4,211,536, Cl. 48-87.000.
McGonigal, Charles; and Voytko, James E., to Western Electric Company, Inc. Apparatus for making slotted beam contact elements. 4,211,099, Cl. 72-47.000.
McGowan, Norman L., to Eocom Corporation. Multiple size plate registration apparatus and method. 4,211,399, Cl. 271-232.000.

McGowan, Raymond J., to Cambrian Engineering Group Limited, The. Apparatus for heat and mass transfer. 4,211,610, Cl. 202-177.000.
McGriff, James E.: *See*—
Frey, Lawrence A.; Harrison, Robert E.; and McGriff, James E., 4,211,389, Cl. 24-269.000.
McKinney Manufacturing Company: *See*—
Gwozdz, Joseph W., 4,211,990, Cl. 335-205.000.
McMullen, John C., to Budd Company, The. Railway car truck and brake support structure. 4,211,311, Cl. 188-209.000.
McNeil Laboratories, Incorporated: *See*—
Rasmussen, Chris R., 4,211,867, Cl. 544-60.000.
McQuay-Perfiex, Inc.: *See*—
Osheroff, Gene W., 4,211,363, Cl. 236-49.000.
Meadows, Roger D., to Dayco Corporation. Vacuum cleaning apparatus. 4,211,457, Cl. 339-15.000.
Meatheringham, Michael R. Football training aid. 4,211,017, Cl. 35-29.00R.
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Dolch, Gernot, 4,211,145, Cl. 85-72.000.
Meckler, Milton. Geothermal mineral extraction system. 4,211,613, Cl. 203-11.000.
Medidge, George H., Jr.: *See*—
Cleversey, Gerald W.; Duncan, Robert J.; Medidge, George H., Jr.; and Fleming, Jean A., 4,212,075, Cl. 364-580.000.
Medtronic, Inc.: *See*—
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,212,061, Cl. 364-414.000.
Mees, Rudolf A., to WTI Wetenschappelijk Technische Instrumentatie B.V. Flame ionization detector. 4,211,746, Cl. 422-54.000.
Megles, John E., Jr.: *See*—
Cantaloupe, Francis A.; Colegrove, Robert W.; Megles, John E., Jr.; and Rittler, Hermann L., 4,211,820, Cl. 428-410.000.
Mehl, Donald N.: *See*—
Kaster, Robert L.; and Mehl, Donald N., 4,211,241, Cl. 128-774.000.
Mehra, Ravinder C.; and Hepinstall, James T., Jr., to Sybron Corporation. Variable volume dispensing bottle with push-pull closure. 4,211,346, Cl. 222-205.000.
Mehta, Parvez; and Warnes, Anthony M., to I.W.S. Nominee Company Limited. Fabrics for protective garments having strands of reflective materials. 4,211,261, Cl. 139-425.00R.
Meier, Rene: *See*—
Graf, Robert; and Meier, Rene, 4,212,015, Cl. 343-883.000.
Meisen, Klaus, to Kleinewefers Gesellschaft mit beschrankter Haftung. Steaming plant for the treatment of continuous webs of textile material containing thermoplastic synthetic fibers. 4,211,094, Cl. 68-5.00D.
Menson, Robert C.: *See*—
Adams, Thomas H.; Beck, James P.; and Menson, Robert C., 4,211,015, Cl. 34-5.000.
Merck & Co., Inc.: *See*—
Kang, Kenneth S.; and Veeder, George T., III, 4,211,774, Cl. 424-181.000.
Ratcliffe, Ronald W., 4,211,707, Cl. 260-326.310.
Villarejos, Miguel, 4,211,333, Cl. 215-249.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,211,768, Cl. 424-95.000.
Mesa Engineering, Inc.: *See*—
Smith, Randall C., 4,211,893, Cl. 179-1.00A.
Metallgesellschaft Aktiengesellschaft: *See*—
Bierbach, Herbert; Kohlen, Rudolf; and Hafke, Carl, 4,211,539, Cl. 48-197.00R.
Metallurgie Hoboken-Overpelt: *See*—
Van Hecke, Michel C. F.; and Deweck, Jean, 4,211,754, Cl. 423-62.000.
Metallwerk Max Brose GmbH & Co.: *See*—
Hess, Peter; and Rampel, Hans, 4,211,122, Cl. 74-89.200.
Metals Research Limited: *See*—
Cole, Michael, 4,211,600, Cl. 156-608.000.
Metz, George F. Biorhythm cycle display apparatus. 4,211,025, Cl. 40-495.000.
Meyer, Jacques: *See*—
Thiele, Kurt; Ahmed, Quazi; Scharen, Walter; and Meyer, Jacques, 4,211,551, Cl. 71-116.000.
Meyer, Victor, Jr.: *See*—
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,211,938, Cl. 307-233.00R.
Meyer, Walter C.: *See*—
FitzGerald, Emerson B.; and Meyer, Walter C., 4,211,691, Cl. 260-42.210.
Michalik, Horst B.; and Weschenfelder, Otto T., to Koenig & Bauer Aktiengesellschaft. Web-fed rotary printing press. 4,211,396, Cl. 270-13.000.
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Leonard, Henri, 4,211,009, Cl. 32-27.000.
Midland-Ross Corporation: *See*—
Mayers, Richard R.; Huebner, Steven R.; and Chojnacki, Dennis A., 4,211,088, Cl. 62-64.000.
Wilson, Clive J., 4,211,370, Cl. 241-183.000.
Midolo, Lawrence L. Vapor cycle cooling system. 4,211,093, Cl. 62-505.000.
Mifsud, Joseph F., to Exxon Production Research Company. Marine seismic transducer. 4,211,301, Cl. 181-120.000.
Mikami, Takeshi: *See*—
Yoneyama, Masakazu; Mukunoki, Yasuo; Mikami, Takeshi; and Sasaki, Jun, 4,211,836, Cl. 430-449.000.
Mikhailov, Viktor P.: *See*—
Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U., 4,211,916, Cl. 371-15.000.
Mildern, William D. Valve. 4,211,347, Cl. 222-402.180.
Miles Laboratories, Inc.: *See*—
Genshaw, Marvin A.; and White, William I., 4,211,845, Cl. 435-14.000.
Miller, Adrian D., to Western Geophysical Co. of America. Air gun with reciprocating shuttle. 4,211,300, Cl. 181-120.000.
Miller, Bruce L.: *See*—
Vaillancour, Mary C.; and Miller, Bruce L., 4,212,085, Cl. 367-124.000.
Miller, Donald E.; and Painter, John P., to General Electric Company. Keyboard verification system. 4,211,915, Cl. 371-15.000.
Miller, Eldon D., to Lava Crucible Refractories, Co. Method of introducing addition agents into a vessel of molten metal. 4,211,554, Cl. 75-53.000.
Miller, Robert C.: *See*—
Vaerewyck, Eugene G.; Miller, Robert C.; and Anderson, Arthur E., 4,211,922, Cl. 250-203.00R.
Milliken Research Corporation: *See*—
Civardi, Frank P.; and Loew, Frederic C., 4,211,806, Cl. 428-91.000.
Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., 4,211,725, Cl. 260-583.00P.
Milliken, Walter C. Data transmission control system. 4,212,080, Cl. 364-900.000.
Minami, Shunji, to Matsushita Electric Industrial Co., Ltd. Electronic power control device. 4,211,940, Cl. 307-251.000.
Minasov, Alexandr N.: *See*—
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.
Minnesota Mining and Manufacturing Company: *See*—
Shipman, Gene H., 4,211,825, Cl. 428-483.000.
Weavers, Mark W.; and Konkler, Anthony W., 4,211,337, Cl. 220-341.000.
Minolta Camera Kabushiki Kaisha: *See*—
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,211,482, Cl. 355-8.000.
Nakamura, Akiyoshi, 4,211,472, Cl. 350-216.000.
Yamada, Seiji, 4,212,000, Cl. 340-347.00P.
Minoura, Mikio: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.
Mishoe, Terry L.; and Peatross, Walton E., to Post, Edward N. Robbery warning device containing selectively actuatable information bearing and warning displays. 4,212,003, Cl. 340-574.000.
Mitaka Instrument Company Limited: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,211,901, Cl. 200-83.00B.
Mitchell, William A.; and Clark, John S., to Bryant Grinder Corporation. Antifriction bearing support. 4,211,454, Cl. 308-26.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Niwa, Yoshiei, 4,211,908, Cl. 219-69.00P.
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,212,019, Cl. 357-13.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, 4,211,882, Cl. 562-416.000.
Sugio, Akitoshi; and Kawaki, Takeo, 4,211,857, Cl. 528-215.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Awano, Takeshi; and Komizo, Toshiyuki, 4,211,431, Cl. 280-804.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Nagano, Takeshi; Goto, Motoo; and Tsuji, Yoshiyuki, 4,211,556, Cl. 75-74.000.
Mitsugi, Koji: *See*—
Nakamori, Shigeru; Yokozeki, Kenzo; Mitsugi, Koji; Eguchi, Chikahiko; and Iwagami, Hisao, 4,211,840, Cl. 435-107.000.
Mitsui Petrochemical Industries Ltd.: *See*—
Matsuda, Akira; Tojo, Tetsuo; and Iwata, Kazuo, 4,211,852, Cl. 525-240.000.
Mitsui, Shigeru: *See*—
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,212,019, Cl. 357-13.000.
Miyakawa, Keizo: *See*—
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.
Miyamoto, Hiroshi: *See*—
Matsuura, Shigeo; Akutsu, Eisaku; and Miyamoto, Hiroshi, 4,211,988, Cl. 334-16.000.
Miyazaki, Joichi: *See*—
Kusumoto, Yasuo; and Miyazaki, Joichi, 4,211,066, Cl. 368-113.000.
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katsuke, to Laurel Bank Machine Co., Ltd. Packaging paper confirming device in a coin packaging machine. 4,211,052, Cl. 53-77.000.

Mize, Erbie G.: *See—*
Brock, James D.; and Mize, Erbie G., 4,211,490, Cl. 366-11.000.
Mizukoshi, Kaoru: *See—*
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.
Mobil Oil Corporation: *See—*
Braid, Milton, 4,211,663, Cl. 252-42.700.
Chen, Nai Y., 4,211,635, Cl. 208-93.000.
Garwood, William E.; and Lee, Wooyoung, 4,211,640, Cl. 208-255.000.
Gross, Benjamin; and Lee, Wooyoung, 4,211,636, Cl. 208-164.000.
Gross, Benjamin; and Lee, Wooyoung, 4,211,637, Cl. 208-164.000.
Haag, Werner O.; and Whitehurst, Darrell D., 4,211,880, Cl. 560-243.000.
Johnson, George C., 4,211,756, Cl. 423-118.000.
Tabak, Samuel A.; and Morrison, Roger A., 4,211,886, Cl. 585-321.000.
Yan, Tsoung-Yuan, 4,211,576, Cl. 106-278.000.
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Dyal, Elton E., 4,211,254, Cl. 137-596.120.
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Magnussen, Haakon T., Jr.; and Moeller, Roy P., 4,211,486, Cl. 356-328.000.
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Hofer, Kurt; Moesch, Rudolf; and Tscheulin, Guenther, 4,211,731, Cl. 260-932.000.
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Mollard, Paul, to Produits Chimiques Ugine Kuhlmann. High-density sodium perborate and method of preparation. 4,211,759, Cl. 423-281.000.
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Amprim, Lawrence; and Williams, Frederick P., 4,211,021, Cl. 40-2.00R.
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Franz, John E.; and Kaufman, Robert J., 4,211,548, Cl. 71-87.000.
Franz, John E.; and Kaufman, Robert J., 4,211,732, Cl. 260-938.000.
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Johnson, John H.; and Fields, Joseph E., 4,211,765, Cl. 424-78.000.
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Bordini, Fosco; and Mauri, Luigi, 4,211,811, Cl. 428-220.000.
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Blake, Ralph K.; Morgan, James G.; and Woodward, David W., 4,211,837, Cl. 430-502.000.
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Cante, Charles J.; Downhour, Russell; Randall, Lee P.; and Morgan, Jeffrey D., 4,211,797, Cl. 426-2.000.
Morgan, Myron B.; and Sharloe, Steven F. Panelboard and mounting fixture combination. 4,211,379, Cl. 248-222.200.
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Morrison, Clyde A.; Karayianis, Nick; and Wortman, Donald E., to United States of America, Army. Method and apparatus for determining aerosol size distributions. 4,211,487, Cl. 356-336.000.
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Tabak, Samuel A.; and Morrison, Roger A., 4,211,886, Cl. 585-321.000.
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Hares, George B.; and Morse, David L., 4,211,569, Cl. 106-53.000.
Mosher, Ralph S., to Robotics, Inc. Compact low force economical general purpose walking beam conveyor. 4,211,321, Cl. 198-774.000.
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Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.
Mueller, Achim; Peetz, Hans-Dieter; Scheeren, Peter; Sistig, Helmut; and Schallenberg, Andreas, to Saint Gobain Industries. Apparatus for applying adhesive to opposed surfaces of shaped members. 4,211,181, Cl. 118-411.000.
Mueller, Dale A.; and Serber, Stephen L., to Honeywell Inc. Heat pump wrong operational mode detector and control system. 4,211,089, Cl. 62-209.000.
Mueller, John J.: *See—*
Kortier, William E.; Mueller, John J.; and Eggers, Philip E., 4,211,889, Cl. 136-237.000.
Mueller, Max A.; and Holmes, Curtis F., to Wilson Greatbatch Ltd. Lithium-halogen cell including monomer charge transfer complex. 4,211,832, Cl. 429-105.000.
Muenker, Adolf H.; and Young, Archie R., II, to Exxon Research & Engineering Co. High temperature solar absorber coating and method of applying same. 4,211,210, Cl. 126-438.000.
Mukunoki, Yasuo: *See—*
Yoneyama, Masakazu; Mukunoki, Yasuo; Mikami, Takeshi; and Sasaki, Jun, 4,211,836, Cl. 430-449.000.
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Spahrkas, Heinrich; Muller, Josef; Komarek, Ernst; and Luck, Wolfhard, 4,211,529, Cl. 8-94.260.
Muller, Karl-Heinz; Krisch, Burkhard; Rindfleisch, Volker; and Neuendorff, Hans F. R., to Siemens Aktiengesellschaft. Transmission-type scanning charged-particle beam microscope. 4,211,924, Cl. 250-311.000.
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Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,211,768, Cl. 424-95.000.
Muller, Rolf, to Papst-Motoren KG. Brushless, permanent magnet d-c pulse current controlled, essentially uniform torque dynamo electric machine, particularly motor. 4,211,963, Cl. 318-254.000.
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Akell, Robert B.; Muller, Werner C.; and Pick, Rudolph, 4,211,638, Cl. 208-180.000.
Multakh, Leonid, to Acker Drill Company, Inc. Impregnated diamond drill bit. 4,211,294, Cl. 175-330.000.
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Parsons, George W., Jr.; and Munro, John J., III, 4,211,928, Cl. 250-497.000.
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Muraoka, Teruo; Yamazaki, Masami; and Ishigaki, Yukinobu, to Victor Company of Japan, Limited. Circuit arrangement for eliminating waveform distortion of an angle-modulated signal transmitted over multipaths. 4,211,979, Cl. 455-306.000.
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Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,212,059, Cl. 364-200.000.
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Scharschmidt, Rudolph K.; and Murphy, Lynn, 4,211,800, Cl. 426-93.000.
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Lipps, Bennie J.; Murphy, William P., Jr.; and Mather, Frank W., III, 4,211,597, Cl. 156-245.000.
Murray, George G. Method of making a molded plastic bowling pin. 4,210,992, Cl. 29-525.000.

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Muth, William J. Slicer outlet extender. 4,211,133, Cl. 83-162.000.

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Zajic, James E.; Hill, Martha A.; Manchester, Donald F.; and Muzika, Karel, 4,211,645, Cl. 210-7.000.

Myers, Elmer P.: *See*—
Pezzini, Mario; and Myers, Elmer P., 4,211,252, Cl. 137-580.000.

Myers, Hugh K; and Hayford, Donald E., to Appleton Papers Inc. Stilt capsules for pressure-sensitive record material. 4,211,437, Cl. 282-27.500.

Nablo, Sam V., to Energy Sciences Inc. Process for imparting durable flame retardancy to fabric, fibers and other materials and improved product produced thereby. 4,211,622, Cl. 204-159.120.

Nachbur, Hermann; and Rohringer, Peter, to Ciba-Geigy Corporation. Method for the fireproofing of synthetic fiber material. 4,211,814, Cl. 428-265.000.

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Kokie, Norio; Kubo, Masaharu; and Nagahara, Shusaku, 4,212,034, Cl. 358-213.000.

Nagano, Takeshi; Goto, Motoo; and Tsuji, Yoshiyuki, to Mitsubishi Kinzoku Kabushiki Kaisha. Reverberatory smelting of non-ferrous metal sulfide ores. 4,211,556, Cl. 75-74.000.

Nagata, Kenzo: *See*—
Arai, Kenichi; Shibazaki, Kenji; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,211,482, Cl. 355-8.000.

Nagata, Wataru: *See*—
Narisada, Masayuki; Tsuji, Teruji; Matsumura, Hiromu; and Nagata, Wataru, 4,211,779, Cl. 424-246.000.

Nagatani, Toshio: *See*—
Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,211,835, Cl. 430-403.000.

Nagel, Joachim, to Biotronik Mess- und Therapiegerate GmbH & Co. Method and apparatus for identifying recurring signal patterns. 4,211,237, Cl. 128-698.000.

Nagy, Kornel: *See*—
Szabo, Imre Z.; Nagy, Kornel; and Finta, Csaba, 4,211,105, Cl. 73-11.000.

Nahas, Nicholas C.: *See*—
Eakman, James M.; Nahas, Nicholas C.; and Euker, Charles A., Jr., 4,211,538, Cl. 48-197.00R.

Nahir, David: *See*—
Sarig, Yoav; Nahir, David; and Alper, Yekutiel, 4,211,062, Cl. 56-328.00R.

Naka, Kozaburo, to Kabushiki Kaisha Mikado. Concrete anchor. 4,211,048, Cl. 52-700.000.

Naka, Takahiro: *See*—
Ikeda, Masayuki; and Naka, Takahiro, 4,211,064, Cl. 368-272.000.

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Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, to Kokusai Denshin Denwa Kabushiki Kaisha. Facsimile signal coding system. 4,212,035, Cl. 358-260.000.

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Nakaho, Junichi: *See*—
Furukawa, Haruki; Usami, Susumu; and Nakaho, Junichi, 4,211,432, Cl. 280-808.000.

Nakai, Kiyoshi: *See*—
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.

Nakamori, Shigeru; Yokozeki, Kenzo; Mitsugi, Koji; Eguchi, Chikahiko; and Iwagami, Hisao, to Ajinomoto Company, Incorporated. Method for producing D-α-amino acid. 4,211,840, Cl. 435-107.000.

Nakamura, Akiyoshi, to Minolta Camera Kabushiki Kaisha. Wide angle objective lens system. 4,211,472, Cl. 350-216.000.

Nakamura, Katsuhiro, to Nippon Electric Co., Ltd. Error correction system for differential phase-shift-keying. 4,211,996, Cl. 371-37.000.

Nakamura, Teruya: *See*—
Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, 4,211,866, Cl. 536-53.000.

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Tobari, Shizen; and Nakano, Mariko, 4,211,532, Cl. 23-231.000.

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Nakata, Kazuo: *See*—
Ichikawa, Akira; Nakata, Kazuo; and Hirose, Kazuhito, 4,211,897, Cl. 179-84.0VF.

Nakaya, Chitose; Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yamamoto, Shinji; Tomura, Teruichi; and Hayakawa, Takayuki, to Hitachi Medical Corporation. Tomographic imaging system. 4,211,926, Cl. 250-445.00T.

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Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, 4,212,062, Cl. 364-414.000.

Napiorkowski, John, to TII Corporation. Fail-safe/surge arrester systems. 4,212,047, Cl. 361-124.000.

Narisada, Masayuki; Tsuji, Teruji; Matsumura, Hiromu; and Nagata, Wataru, to Shionogi & Co., Ltd. 7α-Methoxy substituted cephalosporins. 4,211,779, Cl. 424-246.000.

Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, to Bergwerksverband GmbH; and Ruhrkohle AG. Method of hot-briquetting mixtures of coal and coke. 4,211,533, Cl. 44-10.00C.

Natarajan, Krishnaswamy: *See*—
Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, 4,211,895, Cl. 179-18.00J.

National Patent Development Corporation: *See*—
Raines, Kenneth C., 4,211,588, Cl. 156-73.100.

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Porter, George, 4,211,621, Cl. 204-157.10R.

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Grechishkin, Leonid L.; Gavrovskaya, Ljudmila K.; and Goldfarb, Vadim L., 4,211,764, Cl. 424-9.000.

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Rocchio, Rodolfo; Naumann, Fritz; and Strotkotter, Heinrich, 4,211,200, Cl. 123-445.000.

Nauta, Jan P.; and Kos, Jacob J., to Nauta Roll Corporation. Apparatus and method for embossing web material. 4,211,743, Cl. 264-284.000.

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Nauta, Jan P.; and Kos, Jacob J., 4,211,743, Cl. 264-284.000.

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Sado, Ryoichi; and Nei, Koichi, 4,211,890, Cl. 174-68.500.

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Lipschutz, Paul, 4,211,096, Cl. 70-364.00R.

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Dittrich, Werner; Josten, Walter; Nestler, Heinz; and Schnippering, Friedhelm, 4,211,567, Cl. 106-38.350.

Netzer, David, to Fluor Corporation. Process for the manufacture of fuel gas. 4,211,540, Cl. 48-202.000.

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Lamberts, Kurt; Leppin, Jurgen; Greten, Berndt; and Neubauer, Harry, 4,211,984, Cl. 331-97.000.

Neubeck, Kurt; and Julien, Hermann, to Alexander Wiegand GmbH. Device for producing a spring manometer measuring system. 4,211,000, Cl. 29-714.000.

Neuendorff, Hans F. R.: *See*—
Muller, Karl-Heinz; Krisch, Burkhard; Rindfleisch, Volker; and Neuendorff, Hans F. R., 4,211,924, Cl. 250-311.000.

Ng, Wahling H.; and Zaycer, Andrew, to United States of America, Army. Instrumentation coupling. 4,211,124, Cl. 73-345.000.

Niccols, Peter J. Machines for applying bags or sacks to the discharge spouts of bag-filling machines. 4,211,053, Cl. 53-386.000.

Nichols, Lee H., III; and Smith, Edmund H., Jr., to Du Pont de Nemours, E. I., and Company. Apparatus for on-line defect zoning. 4,211,132, Cl. 83-71.000.

Nickell, Joe H. Magic drinking straw. 4,211,024, Cl. 40-406.000.

Nielsen, Edwin A., to Ideal Toy Corporation. Toy vehicle game and drone vehicle. 4,211,409, Cl. 273-86.00B.

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Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K., 4,211,626, Cl. 204-243.00M.

Nikolaev, Anatoly M.: *See*—
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

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Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,211,768, Cl. 424-95.000.

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Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, 4,211,866, Cl. 536-53.000.

Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.
Iwata, Toshiharu; and Hattori, Tadashi, 4,211,952, Cl. 313-143.000.

Nippon Steel Corporation: *See*—
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,211,552, Cl. 75-24.000.

Nippon Telegraph and Telephone Public Corporation: *See*—
Amemiya, Yoshihito; and Kato, Kotaro, 4,210,996, Cl. 29-610.00R.

Watanabe, Kunio; and Yamamoto, Heiichi, 4,211,894, Cl. 179-2.0EB.
Nippondenso Co., Ltd.: *See*—
Taira, Toshiji, 4,212,001, Cl. 340-388.000.
Nishida, Minoru: *See*—
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Nishikawa, Akio; Katagiri, Junichi; Kinjo, Noriyuki; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, to Hitachi, Ltd. Unsaturated polyester resin composition for use in pressure molding. 4,211,686, Cl. 260-40.00R.
Nishimura, Yoshiharu: *See*—
Kuno, Shiro; and Nishimura, Yoshiharu, 4,212,074, Cl. 364-567.000.
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Sonetaka, Kazunori; Nishino, Atsushi; and Kimura, Kunio, 4,211,672, Cl. 252-455.00R.
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Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,211,892, Cl. 179-1.0SM.
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Ueyama, Takehiko; Nishizawa, Masahiro; Odaka, Yoshiyuki; and Matsuda, Hiromi, 4,211,477, Cl. 354-1.000.
Nishizawa, Yoshihiko: *See*—
Ohno, Masayuki; Akutagawa, Kazuhiko; Inui, Hiroo; Nishizawa, Yoshihiko; Tsukada, Naoshi; and Akao, Takeshi, 4,211,243, Cl. 131-140.00P.
Nissan Motor Company, Limited: *See*—
Hamai, Kyugo, 4,211,189, Cl. 123-308.000.
Kawamura, Yoshihisa; and Saito, Masaaki, 4,211,191, Cl. 123-52.00M.
Nissen, Roland N.; and Soldan, Lyle H. Solar panel. 4,211,213, Cl. 126-452.000.
Nitro Consult AB: *See*—
Stenling, Lars, 4,212,086, Cl. 367-178.000.
Niwa, Yoshiei, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for high frequency discharge shaping of a workpiece by means of a rectangular bipolar pulsating voltage. 4,211,908, Cl. 219-69.00P.
Nogami, Takahiro; Shimizu, Hidetoshi; Horie, Mitsuyuki; and Yaji, Yuji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Emergency brake system for vehicles. 4,211,312, Cl. 188-273.000.
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Akers, Larry D.; Scholl, Charles H.; Smith, Joseph S.; and Williams, Edward A., 4,211,262, Cl. 141-2.000.
Norris, Orlin R. Gaskets for liquid level gages. 4,211,112, Cl. 73-328.000.
Norton, Elizabeth J.: *See*—
Markley, Lowell D.; and Norton, Elizabeth J., 4,211,549, Cl. 71-88.000.
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Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K., 4,211,626, Cl. 204-243.00M.
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Massies, Jean; and Nuyen, Tronc L., 4,211,587, Cl. 148-187.000.
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Oberlin, Robert E.: *See*—
Chapman, Walter H.; Hiland, David E.; Knies, Erwin B.; and Oberlin, Robert E., 4,211,172, Cl. 104-172.0BT.
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Oda, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Ceramic varistor. 4,211,994, Cl. 338-21.000.
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Ueyama, Takehiko; Nishizawa, Masahiro; Odaka, Yoshiyuki; and Matsuda, Hiromi, 4,211,477, Cl. 354-1.000.
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Winkelmann, Hans D.; Wolf, Karlheinz; Oertel, Harald; and Weimann, Norbert, 4,211,699, Cl. 260-239.30R.
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Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,211,550, Cl. 71-89.000.
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Ohta, Tazuo: *See*—
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Ohtake, Nobumasa; Yoshizawa, Ryo; and Koga, Isao, to Chisso Corporation. Method for producing 2,3,3-trimethylindolenine. 4,211,704, Cl. 260-319.100.
Oka, Hitoshi, to Hitachi, Ltd. Chemical copper plating solution. 4,211,564, Cl. 106-1.230.
Okada, Hiroaki; Yamazaki, Iwao; and Yashiki, Takatsuka, to Takeda Chemical Industries, Ltd. Preparations for vaginal administration. 4,211,769, Cl. 424-177.000.
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Andow, Fumio; Matsushima, Tetsuo; and Okamoto, Eiichi, 4,212,046, Cl. 361-80.000.
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Obata, Kanichiro; Kokubu, Yoshikazu; and Okazaki, Isao, 4,211,628, Cl. 204-252.000.
Okuyama, Haruyoshi: *See*—
Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, 4,211,558, Cl. 430-359.000.
Oley, Leonard: *See*—
Jamgochian, Ralph; Oley, Leonard; Stachnik, Joseph; and Tutella, Alfred L., 4,211,342, Cl. 222-129.400.
Olivant, Terence B. Vise. 4,211,393, Cl. 269-111.000.
Olsen, C. Eric, to California Medical Developments, Inc. Disposable diagnostic swab having a stored culture medium. 4,211,323, Cl. 206-210.000.
Omae, Tsutomu: *See*—
Marumoto, Katsuji; and Omae, Tsutomu, 4,211,961, Cl. 318-139.000.
Omron Tateisi Electronics Co.: *See*—
Fukuyama, Toshifumi; and Hattan, Hideaki, 4,211,923, Cl. 250-239.000.
O'Neill, Wilbur J., to Diver's Exchange, Inc. Diving helmet assembly. 4,211,220, Cl. 128-201.270.
Ongaro Dynamics, Ltd.: *See*—
Ongaro, Theodore, 4,211,109, Cl. 73-146.000.
Ongaro, Theodore, to Ongaro Dynamics, Ltd. Multiple plane road wheel for use with tire measuring and correcting apparatus. 4,211,109, Cl. 73-146.000.
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Itoh, Tsutomu, 4,211,339, Cl. 220-450.000.
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Oppenheimer, Jess. Unattached swing teaching apparatus. 4,211,418, Cl. 273-186.00R.
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Ross, James W., Jr.; Amass, Charles E.; Baer, Charles S.; and Thomae, Martin H., 4,211,623, Cl. 204-195.00M.
Orth, Norman W.: *See*—
Hoffman, Charles A.; Weeton, John W.; and Orth, Norman W., 4,211,354, Cl. 228-118.000.
Orthopedic Contour Systems, Inc.: *See*—
McCafferty, Donald F., 4,211,019, Cl. 36-43.000.
Ory, Jean-Marie: *See*—
Hubert, Jacques; and Ory, Jean-Marie, 4,212,005, Cl. 340-603.000.
Osheroff, Gene W., to McQuay-Perflex, Inc. Fluidically-controlled air-conditioning system. 4,211,363, Cl. 236-49.000.
Ostoich, Eli, to Sunlite Plastics, Inc. Extrusion process for laminated medical-surgical tubing. 4,211,741, Cl. 264-173.000.
Otis Engineering Corporation: *See*—
Isaacks, Kenneth M., 4,211,279, Cl. 166-64.000.
Otto Junker GmbH: *See*—
Apelt, Heinz; and Packes, Helmut, 4,210,976, Cl. 15-246.500.
Oughton, Richard W., to Du Pont of Canada Limited. Process for the treatment of comminuted oats. 4,211,695, Cl. 260-123.500.

Oughton, Richard W., to Du Pont of Canada Limited. Process for the treatment of comminuted oats. 4,211,801, Cl. 426-430.000.

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Henrich, Donald A.; and Rose, Edgar, 4,211,515, Cl. 416-146.00R.
Larsen, Robert T., 4,211,058, Cl. 56-17.500.

Outokumpu Oy: *See—*
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.

Owens-Corning Fiberglas Corporation: *See—*
Sleeter, Michael R.; and Dehring, James C., 4,211,107, Cl. 73-49.600.
Williamson, Michael, 4,211,887, Cl. 13-6.000.

Oy Wartsila AB: *See—*
Martikainen, Jaakko; and Pousar, Kurt, 4,211,097, Cl. 70-373.000.

Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, to Sankyo Company Limited. Use of isourea derivatives and triazine derivatives in combination with gibberellins as plant growth regulators. 4,211,550, Cl. 71-89.000.

Ozaki, Masakuni: *See—*
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Packes, Helmut: *See—*
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Painter, John P.: *See—*
Miller, Donald E.; and Painter, John P., 4,211,915, Cl. 371-15.000.

Pajtas, Michael S. Agricultural method and implement. 4,211,285, Cl. 172-156.000.

Palmer, Bertram J.: *See—*
Fisher, Leslie G.; and Palmer, Bertram J., 4,211,589, Cl. 156-73.500.

Pan, Jing-Jong, to Harris Corporation. Cavity excitation utilizing microstrip, strip, or slot line. 4,211,987, Cl. 333-230.000.

Panissidi, Hugo A.; Shelton, Glenmore L., Jr.; and Will, Peter M., to International Business Machines Corporation. Servo-control valve for a linear hydraulic motor. 4,211,147, Cl. 91-184.000.

Panzone, Gianbattista: *See—*
Tarzia, Giorgio; and Panzone, Gianbattista, 4,211,708, Cl. 260-326.460.
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Paoletti, Rodolfo: *See—*
Ferruti, Paolo; and Paoletti, Rodolfo, 4,211,865, Cl. 536-48.000.

Papajewski, Reinhold; Holl, Helmar; and Schmedtkord, Ulrich, to Singer Company, The. Thread guiding system for sewing machine bobbin winders. 4,211,373, Cl. 242-20.000.

Papst-Motoren KG: *See—*
Muller, Rolf, 4,211,963, Cl. 318-254.000.

Parcell, Lloyd J.: *See—*
Westbrook, Clifton W.; Parcell, Lloyd J.; Claytor, Gary L.; and Klock, Byron V., 4,211,646, Cl. 210-15.000.

Pariani, Ronald L.: *See—*
Berry, Milton E.; and Pariani, Ronald L., 4,211,555, Cl. 75-72.000.

Parker, William H. C.: *See—*
Eadie, Brian K. M.; and Parker, William H. C., 4,211,583, Cl. 148-6.350.

Parsons, George W., Jr.; and Munro, John J., III, to Technical Operations, Incorporated. Linear storage projector. 4,211,928, Cl. 250-497.000.

Pasich, Jerzy: *See—*
Slowinski, Stanislaw; Vasina, Stanislaw; Pasich, Jerzy; Kosek, Jerzy; and Glownia, Stanislaw, 4,211,274, Cl. 164-401.000.

Patel, Harish A.: *See—*
Anderson, Gary C.; Howey, Jon A.; and Patel, Harish A., 4,211,227, Cl. 128-296.000.

Pavilanis, Vytautas: *See—*
Dubreuil, Robert, deceased; Ast, Orvo; and Pavilanis, Vytautas, 4,211,843, Cl. 435-2.000.

Payne, Anthony R.: *See—*
Cairns, Hugh; and Payne, Anthony R., 4,211,788, Cl. 424-283.000.

Payne, Ivan C.: *See—*
Blake, Colin C.; and Payne, Ivan C., 4,211,630, Cl. 204-275.000.

Pearce, Arnold P., to Flameless Furnaces Limited. Fluidized bed combusters. 4,211,186, Cl. 122-4.00D.

Peatross, Walton E.: *See—*
Mishoe, Terry L.; and Peatross, Walton E., 4,212,003, Cl. 340-574.000.

Pechhold, Engelbert; and Robinson, Ivan M., to Du Pont de Nemours, E. I., and Company. Block polymers of hydroquinone di-(β-hydroxyalkyl) ethers or isomers thereof and tetrahydrofuran/alkylene oxide copolymers. 4,211,862, Cl. 528-405.000.

Peck, Robert L., to Atlantic Richfield Company. Thermoelectric energy system. 4,211,828, Cl. 429-11.000.

Pedersen, Alec, to Pedersen Industries Ltd. Twin ski. 4,211,433, Cl. 280-601.000.

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Pedersen, Alec, 4,211,433, Cl. 280-601.000.

Pedroso, Raul I.: *See—*
Pedroso, Rosa M.; and Pedroso, Raul I., 4,211,501, Cl. 401-261.000.

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Peetz, Hans-Dieter: *See—*
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Pellegrini, John P., Jr., to Gulf Research and Development Company. Electrical apparatus insulated with a high fire point synthetic alkylaromatic fluid. 4,211,665, Cl. 252-63.000.

Pelton, Ronald L.: *See—*
Coffaro, Matthew; and Pelton, Ronald L., 4,211,403, Cl. 272-134.000.

Pemsler, J. Paul; and Litchfield, John K., to Kennecott Copper Corporation. Recovery of molybdenun values from dilute solutions. 4,211,753, Cl. 423-54.000.

Penco, Sergio: *See—*
Vicario, Gian P.; Penco, Sergio; and Arcamone, Federico, 4,211,864, Cl. 536-17.00A.

Pengue, Leonard M.: *See—*
Hansen, Gary G.; Pengue, Leonard M.; and Watkin, Theodore, 4,211,397, Cl. 271-4.000.

Pennwalt Corporation: *See—*
King, James P., 4,211,662, Cl. 252-21.000.
Wiechers, Adriaan, 4,211,644, Cl. 209-166.000.

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Hashimoto, Junichi, 4,211,500, Cl. 401-65.000.

Perlin, Allen I.: *See—*
Hellstrom, Melbourne J.; Perlin, Allen I.; and Kutlik, Edward, 4,211,927, Cl. 250-445.00T.

Perry, Gerald N., to Chave & Earley, Inc. Filter medium. 4,211,661, Cl. 210-491.000.

Petersen, Egon N.: *See—*
Vollkommer, Norbert; Petersen, Egon N.; Klinkenberg, Herbert; and Schmidt, Werner, 4,211,730, Cl. 260-45.75B.

Peterson, Marvin L.; and Maxson, Orwin G., to Conoco, Inc. Bimetallic corrosion resistant structural joint and method of making same. 4,211,503, Cl. 405-216.000.

Peterson, Richard H.: *See—*
Jensen, Richard W.; and Peterson, Richard H., 4,211,141, Cl. 84-1.270.

Peterson, Wesley R., to Singer Company, The. Sewing machine mount. 4,211,178, Cl. 112-258.000.

Peterson, William A., Jr.: *See—*
Marchak, Roman O.; Peterson, William A., Jr.; and Carp, Ralph W., 4,212,065, Cl. 364-431.000.

Petranyi, Pal I., to Lever Brothers Company. Package for solid or pasty goods. 4,211,328, Cl. 206-525.000.

Petroff, Peter D. Infiltration-inflow sewer line analyzer. 4,211,111, Cl. 73-195.000.

Petrovich, Vojislav. Beneficiation of coal and metallic and non-metallic ores by froth flotation process using polyhydroxy alkyl xanthate depressants. 4,211,642, Cl. 209-167.000.

Petukhov, Evgeny F.: *See—*
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.

Pews, R. Garth; and Ash, Mezzie L., to Dow Chemical Company, The. Preparation of chloromethylpyridines. 4,211,873, Cl. 546-346.000.

Pezzini, Mario; and Myers, Elmer P., to Yaun-Williams Bucket Co., The. Hydraulic coupler. 4,211,252, Cl. 137-580.000.

Pfister, Hans B.: *See—*
Baltensperger, Rudolf; and Pfister, Hans B., 4,211,171, Cl. 104-123.000.

Pfizer Inc.: *See—*
Chapman, Kenneth G., 4,211,781, Cl. 424-250.000.
Kraska, Allen R., 4,211,794, Cl. 424-330.000.

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Glauner, Jens; Kauhl, Gunther; Pflug, Hannes; Steinke, Leo; and Weyl, Helmut, 4,211,204, Cl. 123-145.00A.

Phillips Petroleum Company: *See—*
Banks, Robert L., 4,211,885, Cl. 585-316.000.
Bresson, Clarence R.; and Thornberry, William E., 4,211,013, Cl. 33-147.00R.
Finch, Jack N.; and Poska, Forrest L., 4,211,718, Cl. 260-449.00M.
Henry, William E., 4,211,974, Cl. 324-377.000.
McDaniel, Max P.; Hottovy, John D.; and Welch, Melvin B., 4,211,863, Cl. 528-483.000.

Phipps, Arthur L., to Condec Corporation. Foam extrusion apparatus and method. 4,211,739, Cl. 264-51.000.

Photovolt Corporation: *See—*
Eppstein, Lee B.; Kroeger, James K.; and Lindblom, Kenneth A., 4,211,614, Cl. 204-1.00T.

Pick, Rudolph: *See—*
Akell, Robert B.; Muller, Werner C.; and Pick, Rudolph, 4,211,638, Cl. 208-180.000.

Pidgeon, Howard H. J., to Compair Construction & Mining Limited. Oil-injected rotary compressors. 4,211,522, Cl. 418-99.000.

Pierce, Donald C. Apparatus for cutting stiff sheet material. 4,211,137, Cl. 83-864.000.

Pierrard, Francois: *See—*
L'Hermite, Mathurin; and Pierrard, Francois, 4,211,584, Cl. 148-16.700.

Piesner, Barry J. Hydroponic growing systems. 4,211,034, Cl. 47-62.000.

Pilat, Michael J.; Powell, Edward B., Jr.; and Thielke, John F., to Electric Power Research Institute, Inc. Assembly for and method of sampling particle-laden fluids and a cascade impactor used therewith. 4,211,116, Cl. 73-421.50A.

Pilz, Erich: *See—*
Fichtl, Karl; Berger, Rudolf; Durnfelder, Otto; and Pilz, Erich, 4,211,164, Cl. 100-145.000.

Pinckney Molded Plastics, Inc.: *See*—
Stahl, Edward L.; Sanders, Ellsworth E.; and Blair, George C., 4,211,327, Cl. 206-505.000.

Pinsky, Gennady I.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Danilov, Leonid I.; and Pinsky, Gennady I., 4,211,101, Cl. 72-247.000.

Pitman, Raymond F., to R O Corporation. Color coded boom and chart system. 4,211,332, Cl. 212-157.000.

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Hansen, Gary G.; Pengue, Leonard M.; and Watkin, Theodore, 4,211,397, Cl. 271-4.000.

Plambeck, Louis, Jr., to Du Pont de Nemours, E. I., and Company. Method of producing cross-linked polymeric images. 4,211,561, Cl. 430-306.000.

Pleschiutschnigg, Fritz-Peter: *See*—
Schrewe, Hans; and Pleschiutschnigg, Fritz-Peter, 4,211,272, Cl. 164-89.000.

Plessey Canada Ltd.: *See*—
Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, 4,211,895, Cl. 179-18.00J.

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Stewart, William J., 4,211,470, Cl. 350-96.210.

Plotto, Michel, to Compagnie Internationale pour l'Informatique. Platform for magnetic transducers having dust diverter means. 4,212,044, Cl. 360-103.000.

Plumer, Mark J. Vehicle wheel lug nut apparatus. 4,211,128, Cl. 81-71.000.

Pneumo Corporation: *See*—
Hrusch, Louis C., 4,211,149, Cl. 92-27.000.

Podlewski, Johann, to Licentia Patent-Verwaltungs-G.m.b.H. Control for an inverter station. 4,212,055, Cl. 363-71.000.

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Polak's Frutal Works B.V.: *See*—
Lenselink, Willem, 4,211,674, Cl. 252-522.00R.

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Greenwald, Richard B., 4,211,559, Cl. 430-211.000.
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Yazawa, Masahide; and Kurihara, Kazuhiko, 4,211,807, Cl. 428-109.000.

Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S. Method for thermal processing bitumen-containing materials and device for realization of same. 4,211,606, Cl. 201-12.000.

Poole, Brian; and Young, Philip J., to Air Products and Chemicals, Inc. Apparatus for shielding molten metal during teeming. 4,211,390, Cl. 266-207.000.

Poole, Lynn A., to United States of America, Navy. Beam-former for FFT-based signal processor. 4,212,084, Cl. 367-118.000.

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Popper Engineering Ltd.: *See*—
Popper, Jakhin B., 4,211,441, Cl. 292-259.00R.

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Popplewell, James M.: *See*—
Pryor, Michael J.; Popplewell, James M.; and Anthony, William H., 4,211,827, Cl. 428-654.000.

Portable Cookery, Inc.: *See*—
Darbo, Rolf E., 4,211,206, Cl. 126-9.00R.

Portals Plus, Inc.: *See*—
Resech, Raymond W., 4,211,423, Cl. 277-212.0FB.

Porter, George, to National Research Development Corporation. Method and apparatus for producing hydrogen using solar energy. 4,211,621, Cl. 204-157.10R.

Portmann, Alexandre, to BBC Brown Boveri & Company Limited. Start-up motor assembly for rotational machines. 4,211,070, Cl. 60-39.080.

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Finch, Jack N.; and Poska, Forrest L., 4,211,718, Cl. 260-449.00M.

Possin, George E.: *See*—
Barber, William D.; and Possin, George E., 4,212,082, Cl. 365-118.000.

Post, Edward N.: *See*—
Mishoe, Terry L.; and Peatross, Walton E., 4,212,003, Cl. 340-574.000.

Potapov, Valery N.: *See*—
Vasilinina, Olga V.; Kidyashev, Jury K.; Potapov, Valery N.; Ryabikov, Stanislav V.; Stepanov, Anatoly M.; and Strebkov, Dmitry S., 4,211,581, Cl. 136-89.0CA.

Potin, Philippe: *See*—
Michel, Jean-Claude; and Potin, Philippe, 4,211,700, Cl. 260-239.30A.

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Martikainen, Jaakko; and Pousar, Kurt, 4,211,097, Cl. 70-373.000.

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Pilat, Michael J.; Powell, Edward B., Jr.; and Thielke, John F., 4,211,116, Cl. 73-421.5GA.

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Ackley, Richard H., 4,211,818, Cl. 428-367.000.
Cunningham, Hugh, 4,211,627, Cl. 204-252.000.
Davis, Douglas H., 4,211,568, Cl. 106-52.000.

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Prey, Gerhard, to Siemens Aktiengesellschaft. Method and apparatus for controlling the sequence of instructions in stored-program computers. 4,212,060, Cl. 364-200.000.

Price, Herbert B., to Spencer Wright Industries, Inc. Knife block for tufting machines. 4,211,176, Cl. 112-79.00R.

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Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I. Dry coke quenching process. 4,211,607, Cl. 201-39.000.

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Manoogian, David V.; and Procaccino, Roderic J., 4,212,012, Cl. 343-7.00A.

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Youngquist, Rudolph W., 4,211,694, Cl. 260-123.500.

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Guerin, Jean G., 4,211,728, Cl. 260-658.00R.
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Cakebread, William A.; and Pryke, Graham R., 4,212,006, Cl. 340-685.000.

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Slowinski, Stanislaw; Vasina, Stanislaw; Pasich, Jerzy; Kosek, Jerzy; and Glownia, Stanislaw, 4,211,274, Cl. 164-401.000.

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Rymarchyk, Nicholas M.; and Smith, Charles T., 4,211,316, Cl. 193-2.00R.

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Glassmeyer, John J., 4,211,444, Cl. 293-150.000.

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Pyle, Stoddard H.: *See*—
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Chaney, Robert F.; and Connell, Gene N., 4,211,491, Cl. 366-30.000.

Quentin, Gerhard. Method of purifying industrial sugar solutions. 4,211,579, Cl. 127-46.00A.

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Maskens, Geoffrey D., 4,212,049, Cl. 362-33.000.

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Pitman, Raymond F., 4,211,332, Cl. 212-157.000.

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Babinski, John P.; Bertelsen, Bruce I.; Raacke, Karl H.; and Sirgo, Valdeko H., 4,211,505, Cl. 406-19.000.

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Lanter, Kent J.; Betz, Norman L.; and Williams, Danny L., 4,211,796, Cl. 426-2.000.

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Hess, Peter; and Rampel, Hans, 4,211,122, Cl. 74-89.200.

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Cante, Charles J.; Downhour, Russell; Randall, Lee P.; and Morgan, Jeffrey D., 4,211,797, Cl. 426-2.000.

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Rao, G. R. Mohan, to Texas Instruments Incorporated. MOS Integrated with implanted resistor elements. 4,212,083, Cl. 365-154.000.

Rasmussen, Chris R., to McNeil Laboratories, Incorporated. Nitrogen heterocyclic carboximidamide compounds. 4,211,867, Cl. 544-60.000.

Ratcliffe, Ronald W., to Merck & Co., Inc. Process for hydrolytically cleaving O-sulfo thienamycins. 4,211,707, Cl. 260-326.310.

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Kuhlthau, Hans-Peter; Psaar, Hubertus; and Raue, Roderich, 4,211,436, Cl. 282-27.500.

Ravnikar, Borut. Wheel. 4,211,268, Cl. 152-5.000.

Ray, Stephen W. Solid state lamp. 4,211,955, Cl. 315-53.000.

Ray, Sunnie, to Game Time, Inc. Modularized slide. 4,211,400, Cl. 272-56.50R.

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Manoogian, David V.; and Procaccino, Roderic J., 4,212,012, Cl. 343-7.00A.

RCA Corporation: *See*—
Goldman, Abraham, 4,211,563, Cl. 430-286.000.
Harford, Jack R., 4,212,032, Cl. 358-177.000.
Hopkins, Robert S., Jr., 4,212,008, Cl. 340-723.000.
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Rosnowski, Wojciech, 4,211,182, Cl. 118-725.000.
Schade, Otto H., Jr., 4,211,941, Cl. 307-303.000.
Torrington, Leslie A., 4,211,421, Cl. 274-9.00B.
Turnbull, John C.; and Yoder, Benjamin F., 4,210,988, Cl. 29-25.150.

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Sramek, Elmer D., 4,211,054, Cl. 53-502.000.

Reed, Douglas A., to Tektronix, Inc. Multilayer circuit board construction and method. 4,211,603, Cl. 156-659.100.

Reese, Jonathan. Combination container and control form for shipping, identifying and reordering merchandise. 4,211,434, Cl. 282-11.50A.

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Lombard, Claude; and Viala, Guy, 4,211,991, Cl. 335-207.000.

Rehrmann, Helmut: *See*—
Fitzky, Hans G.; Schmitt, Franz; Bollongino, Norbert; and Rehrmann, Helmut, 4,211,970, Cl. 324-58.50C.

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Reichman, Uri: *See*—
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Reier, Richard: *See*—
Fischer, Philipp-Josef; and Reier, Richard, 4,211,494, Cl. 400-124.000.

Relander, John H.: *See*—
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.

Renault, Michele: *See*—
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Resech, Raymond W., to Portals Plus, Inc. Roof seal device. 4,211,423, Cl. 277-212.0FB.

Reuterskiold, Tom C. Device for absorbing tension loads in an elongate flexible member. 4,211,308, Cl. 188-1.00C.

Reyes, Daniel; and Spector, George. Combined burglar frightening device and alarm. 4,212,007, Cl. 340-691.000.

Reynolds, Charles E., to AMP Incorporated. Crimped electrical connections for conductors on thin substrates. 4,211,466, Cl. 339-176.0MF.

Reynolds Metals Company: *See*—
Bublitz, Robert F., 4,211,338, Cl. 220-359.000.

Rheinmetall GmbH: *See*—
Haep, Heinz, 4,211,168, Cl. 102-41.000.

Rhodes, Keith H., to Hesston Corporation. Mowing rotor. 4,211,060, Cl. 56-294.000.

Rhone-Poulenc-Textile: *See*—
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Rice, DeLong, Jr. Holding device. 4,211,158, Cl. 99-403.000.

Richard Wolf Medical Instruments Corp.: *See*—
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Richards, George B., to Fluid Device Corporation. Liquid level control system. 4,211,249, Cl. 137-393.000.

Richards, Joseph A.: *See*—
Einem, Robert E.; Richards, Joseph A.; and Gassowski, Jerzy R., 4,211,495, Cl. 400-124.000.

Richardson, Larry D.; and Sobolewski, Annette M. Convertible and collapsible bench/table combination. 4,211,449, Cl. 297-126.000.

Richey, Clarence B., to Purdue Research Foundation. Flexible crop pick-up device. 4,211,061, Cl. 56-327.00R.

Rickert, Raymond E.; and Swalls, Billy J., to Templeton Coal Co., Inc. Automatic purging system. 4,211,251, Cl. 137-565.000.

Rindfleisch, Volker: *See*—
Muller, Karl-Heinz; Krisch, Burkhard; Rindfleisch, Volker; and Neuendorff, Hans F. R., 4,211,924, Cl. 250-311.000.

Ringer, Charles J., to Judd Ringer Corporation. Plant support and compost enclosure. 4,211,033, Cl. 47-45.000.

Rittler, Hermann L.: *See*—
Cantaloupe, Francis A.; Colegrove, Robert W.; Megles, John E., Jr.; and Rittler, Hermann L., 4,211,820, Cl. 428-410.000.

Rivier, Jean E. F.; Brown, Marvin R.; and Vale, Wylie W., Jr., to Salk Institute for Biological Studies, The. Peptides with para-substituted phenylalanine. 4,211,693, Cl. 260-112.50S.

Roberling, Fritz. Rodent poison dispenser with protective closure plate of attractive odor or taste. 4,211,028, Cl. 43-131.000.

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Glauner, Jens; Kauhl, Gunther; Pflug, Hannes; Steinke, Leo; and Weyl, Helmut, 4,211,204, Cl. 123-145.00A.

Robert, Guy: *See*—
Malugani, Jean-Pierre; Wasniewski, Alain; Doreau, Michel; Robert, Guy; Hubert, Odile; and Massin, Michel, 4,211,475, Cl. 350-357.000.

Roberts & Porter, Inc.: *See*—
Trankle, Richard A., 4,211,808, Cl. 428-131.000.

Robinett, Ross. Toy hoop device. 4,211,032, Cl. 46-220.000.

Robins, Roland K.: *See*—
Witkowski, Joseph T.; and Robins, Roland K., 4,211,771, Cl. 424-180.000.

Robinson, Ivan M., to Du Pont de Nemours, E. I., and Company. Block polymers of poly(tetramethylene oxide) and tetrahydrofuran/alkylene oxide copolymers. 4,211,854, Cl. 525-410.000.

Robinson, Ivan M.: *See*—
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Robotics, Inc.: *See*—
Mosher, Ralph S., 4,211,321, Cl. 198-774.000.

Rocchio, Rodolfo; Naumann, Fritz; and Strotkotter, Heinrich, to Audi Nsu Auto Union Aktiengesellschaft. Vacuum force amplifier for internal combustion engine. 4,211,200, Cl. 123-445.000.

Rodeaud, Jacques: *See*—
Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, 4,211,795, Cl. 426-2.000.

Roesler, Layton S.; and Roesler, Patricia I. Table tennis net holder. 4,211,406, Cl. 273-30.000.

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Roesler, Layton S.; and Roesler, Patricia I., 4,211,406, Cl. 273-30.000.

Rohm GmbH: *See*—
Grampp, Ekkehard; Schmitt, Reinhold; and Uhlig, Helmut, 4,211,799, Cl. 426-50.000.
Vetter, Heinz, 4,211,525, Cl. 425-326.100.

Rohringer, Peter: *See*—
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Roitt, Ivan M.: *See*—
Huggins, Keith G.; and Roitt, Ivan M., 4,211,762, Cl. 424-1.000.

Rollins, Richard A.: *See*—
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Roman, Steven A.; and Soloway, Samuel B., to Shell Oil Company. Oxyimino-substituted (1R,cis)-cyclopropanecarboxylate pesticides. 4,211,789, Cl. 424-285.000.

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Roorda, John W.: *See*—
Deavenport, Joe E.; and Roorda, John W., 4,211,959, Cl. 315-362.000.

Roos, Edward V., to Harris Corporation. Arrangement for coupling RF energy into piezoelectric transducers. 4,211,950, Cl. 310-327.000.

Rose, Edgar: *See*—
Henrich, Donald A.; and Rose, Edgar, 4,211,515, Cl. 416-146.00R.

Rose, Selwyn H.; and Chattopadhyay, Ashok, to DeSoto, Inc. Polyphosphazene copolymers with phenoxy and with phenylphenoxy and/or naphthoxy groups, and aqueous dispersions. 4,211,677, Cl. 260-13.000.

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Ludecke, Otto A.; and Rosebrock, Theodore L., 4,211,075, Cl. 60-285.000.

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Rosenbusch, Helmut W.: *See*—
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Rosenkranz, Hans J.: *See*—
Keggenhoff, Berthold; Bandtel, Eberhard; and Rosenkranz, Hans J., 4,211,751, Cl. 422-134.000.

Rosien, Richard E.: *See—*
Games, John E.; Rosien, Richard E.; and Bitterli, William W., 4,212,078, Cl. 364-900.000.
Rosnowski, Wojciech, to RCA Corporation. Diffusion apparatus. 4,211,182, Cl. 118-725.000.
Ross, James W., Jr.; Amass, Charles E.; Baer, Charles S.; and Thomae, Martin H., to Orion Research Incorporated. Halide electrode. 4,211,623, Cl. 204-195.00M.
Rossmy, Gerd: *See—*
Kollmeier, Hans-Joachim; and Rossmy, Gerd, 4,211,849, Cl. 521-164.000.
Roth, Martin; Kvita, Vratislav; and Greber, Gerd, to Ciba-Geigy Corporation. Imidyl-benzenedicarboxylic acid derivatives. 4,211,705, Cl. 260-326.00C.
Rovnyak, George C., to E. R. Squibb & Sons, Inc. Mercaptoacyldihydropyrazole carboxylic acid derivatives. 4,211,786, Cl. 424-273.00P.
Rudnick, Paul J.; and Heaslett, Alastair M., to Ampex Corporation. Method and apparatus employing an improved format for recording and reproducing digital audio. 4,211,997, Cl. 371-38.000.
Ruggiero, Anthony M. Invalid walker with improved brake means. 4,211,309, Cl. 188-83.000.
Ruhl, Herman. Vehicle multicondition recording system. 4,212,016, Cl. 346-62.000.
Ruhrkohle AG: *See—*
Kortenbusch, Werner, 4,211,518, Cl. 417-54.000.
Nashan, Gerd; Langhoff, Josef; Lehmann, Joachim; Kleisa, Kurt; and Makrutzki, Dieter, 4,211,533, Cl. 44-10.00C.
Rundqvist, Lars-Goran: *See—*
Frykhult, Rune H.; and Rundqvist, Lars-Goran, 4,211,643, Cl. 209-211.000.
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Rybalko, Sergei A. Electron beam device with variable beam energy. 4,211,953, Cl. 313-450.000.
Ryco Graphic Manufacturing, Inc.: *See—*
Switall, Thomas G., 4,211,258, Cl. 137-862.000.
Rymarchyk, Nicholas M.; and Smith, Charles T., to Pullman Berry Company. Chute for charging steel making vessels. 4,211,316, Cl. 193-2.00R.
Rzasa, Ronald P., to Cryomedics, Inc. Cryosurgical instrument. 4,211,231, Cl. 128-303.100.
Saab-Scania Aktiebolag: *See—*
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Sado, Ryoichi; and Nei, Koichi, to Shin-Etsu Polymer Co., Ltd. Electronic circuit boards. 4,211,890, Cl. 174-68.500.
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Saele, Arvid H.; and Johannsen, Donald O., to Deere & Company. Positive neutral control for hydrostatic transmission. 4,211,079, Cl. 60-433.000.
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Sahm, William H., III: *See—*
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Saida, Kenichi: *See—*
Asano, Hideki; Kokaku, Hiroyoshi; Suzuki, Katsuhito; and Saida, Kenichi, 4,211,690, Cl. 260-42.460.
Saillour, Jean M.: *See—*
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Saito, Hisashi: *See—*
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Sakai, Koichi; and Ikeyama, Kazunori, to U.S. Philips Corporation. Coffee maker. 4,211,157, Cl. 99-306.000.
Sakakibara, Naoji; and Hashimoto, Nobuyuki, to Aisin Seiki Kabushiki Kaisha. Solenoid valve. 4,211,257, Cl. 137-625.650.
Sakulevich, Faddei J.; Kravchenko, Lev N.; Kozhuro, Lev M.; and Shimansky, Vladimir A. Rotor-type machine for abrasive machining of parts with ferromagnetic abrasive powders in magnetic field. 4,211,041, Cl. 51-131.300.
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and by Ishii, Kyoko, administrator, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic fault detector. 4,211,118, Cl. 73-592.000.
Salee, Gideon, to Hooker Chemicals & Plastics Corp. Polymer blends with improved flame retardance. 4,211,687, Cl. 260-40.00R.
Salk Institute for Biological Studies, The: *See—*
Rivier, Jean E. F.; Brown, Marvin R.; and Vale, Wylie W., Jr., 4,211,693, Cl. 260-112.50S.
Salmon, Peter C.; and Kidd, Christopher, to Consumer Promotions, Inc. Merchandising display. 4,211,331, Cl. 211-13.000.
Salvino, Lawrence P. Portable device for supporting a roll of aluminum sheeting for dispensing. 4,211,374, Cl. 242-55.000.
Sambucetti, Carlos J., to International Business Machines Corporation. Electrochromic printing system. 4,211,616, Cl. 204-2.000.
Samejima, Toshihide: *See—*
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Samour, Carlos M., to Kendall Company, The. Method of coating pipe. 4,211,595, Cl. 156-187.000.
Sampson, Harold J. Log clamping apparatus. 4,211,394, Cl. 269-239.000.
Sanders, Ellsworth E.: *See—*
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Sandoz Ltd.: *See—*
Hofer, Kurt; Moesch, Rudolf; and Tscheulin, Guenther, 4,211,731, Cl. 260-932.000.
Sangamo Weston, Inc.: *See—*
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Sankyo Company Limited: *See—*
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,211,550, Cl. 71-89.000.
Sanyo Electric Co., Ltd.: *See—*
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Sarig, Yoav; Nahir, David; and Alper, Yekutiel. Machine for harvesting agricultural produce. 4,211,062, Cl. 56-328.00R.
Sasaki, Jun: *See—*
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Sasayama, Hiroharu, to C.I. Kasei Company Limited. Process for the preparation of self-swelling leakage-preventing materials. 4,211,851, Cl. 525-108.000.
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Satake, Kunio: *See—*
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Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, to Tokyo Shibaura Electric Co., Ltd. Information processing system. 4,212,059, Cl. 364-200.000.
Sato, Hideo: *See—*
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Sato, Kazue: *See—*
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Sato, Tetsuya; Kato, Osamu; and Saito, Hisashi, to Kabushiki Kaisha Teikoku Denki Seisakusho. Apparatus for detecting faults to be occurred or initially existing in a running electric rotary machine. 4,211,973, Cl. 324-158.0MG.
Sauer, Donald J.: *See—*
Kosonocky, Walter F.; and Sauer, Donald J., 4,211,936, Cl. 307-221.00D.
Saunders, Louie G. Columnar structure. 4,211,179, Cl. 114-90.000.
Sawada, Daisaku: *See—*
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Saxon, Arthur F., to Dravo Corporation. Hinged load dumping door for multi-cell extractors. 4,211,752, Cl. 422-268.000.
Saxton, William R.; and Lawford, William H., to Canadian International Paper Company. High yield chemimechanical pulping processes. 4,211,605, Cl. 162-64.000.
Scales, Stanley R.: *See—*
Dill, Herbert C.; and Scales, Stanley R., 4,211,508, Cl. 407-120.000.
Schaar, Charles H., to Colgate-Palmolive Company. Disposable diaper with flap covered tape fastener. 4,211,226, Cl. 128-287.000.
Schade, Otto H., Jr., to RCA Corporation. Integrated circuitry including low-leakage capacitance. 4,211,941, Cl. 307-303.000.
Schafer, Klaus: *See—*
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Schallenberg, Andreas: *See—*
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Scharen, Walter: *See—*
Thiele, Kurt; Ahmed, Quazi; Scharen, Walter; and Meyer, Jacques, 4,211,551, Cl. 71-116.000.
Scharschmidt, Rudolph K.; and Murphy, Lynn, to General Foods Corporation. Flake cereal process and product. 4,211,800, Cl. 426-93.000.
Scheer, Martin; Anke, Heidrun; Konig, Wilfried; and Zahner, Hans, to Bayer Aktiengesellschaft. Antibacterial agents effective in growth promotion and increased feed utilization. 4,211,787, Cl. 424-279.000.
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Mueller, Achim; Peetz, Hans-Dieter; Scheeren, Peter; Sistig, Helmut; and Schallenberg, Andreas, 4,211,181, Cl. 118-411.000.
Scheurecker, Werner, to Voest-Alpine Aktiengesellschaft. Arrangement at a continuous casting plant. 4,211,273, Cl. 164-150.000.
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Sears, Hartley M., 4,211,456, Cl. 339-12.00R.

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Schmid, Rolyn A., to Bender Machine Works, Inc. Detergent supply control for automatic dishwasher. 4,211,517, Cl. 417-12.000.
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Morrison, Howard J.; Gardner, Denise; and Schoenfield, Palmer J., 4,211,030, Cl. 46-67.000.
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Scholle, William R. Dispenser spigot. 4,211,348, Cl. 222-498.000.
Schonteich, Peter: *See*—
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Schreiber, William L.: *See*—
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Bock, Erich; Braun, Erwin; and Wulfhorst, Burkhard, 4,211,063, Cl. 57-302.000.
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Schwartz, Charles A. Method of manufacturing a cooled lifting magnet with damped eddy currents. 4,210,994, Cl. 29-606.000.
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Horng, Cheng T.; and Schwenker, Robert O., 4,211,582, Cl. 148-1.500.
Scott, George W., to Textron, Inc. Slide fastener stringer with folded and bonded continuous molded coupling element and method and apparatus for manufacturing. 4,210,985, Cl. 24-205.16R.
Scott, Oscar T., IV, to J. M. Huber Corporation. Method of producing a carbon black silica pigment. 4,211,578, Cl. 106-307.000.
Scott, Raymond G.; and Wysocki, Lawrence S., to Champion International Corporation. Openable container cover (III). 4,211,360, Cl. 229-43.000.
Scribner, Richard M., to Du Pont de Nemours, E. I., and Company. 3-Pyrazolidinone carboxamides. 4,211,876, Cl. 548-367.000.
Sears, Hartley M., to Schick Laboratories, Inc. Magnetic electrical connectors. 4,211,456, Cl. 339-12.00R.
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Segar, Richard B.; and Marascalco, Lewis C., to GPD, Inc. Electronic calorie counter. 4,212,079, Cl. 364-900.000.
Seidler, Donald W.: *See*—
Hein, Carl C.; Silver, Harold K.; Spitz, Joseph J.; and Seidler, Donald W., 4,211,326, Cl. 206-484.000.
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Kitai, Kiyoshi; Kobayashi, Masaru; Yonemoto, Tomoo; and Kato, Shogo, 4,211,480, Cl. 354-234.000.
Seitz, Lamont J.; and Fort, Geza, to International Telephone and Telegraph Corporation. Electrical connector test equipment. 4,211,108, Cl. 73-141.0AB.
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Semkina, Novella V.; Bokach, Galina S.; and Zinkovsky, Ivan V. Material for producing pyrometric refractory components, pyrometric refractory component, and process for producing same. 4,211,624, Cl. 204-195.00S.
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Teague, Walter D., Jr.; and Sempliner, Arthur T., 4,210,975, Cl. 15-22.00R.
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Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., to Texaco Inc. Control system for a furfural refining unit receiving heavy sweet charge oil. 4,212,070, Cl. 364-500.000.
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Mueller, Dale A.; and Serber, Stephen L., 4,211,089, Cl. 62-209.000.
Shah, Yatish T.: *See*—
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Shahan, James E., to Transco, Inc. Acoustical panel mounting element. 4,211,046, Cl. 52-506.000.
Shanks, Ian A., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal display devices. 4,211,473, Cl. 350-337.000.
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Sharp Kabushiki Kaisha: *See*—
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Shearing, Herbert J., to Imperial Chemical Industries Limited. Quick-set compositions of hydraulic cement, silica, water, polyisocyanate and polyol. 4,211,680, Cl. 260-29.2TN.
Shell International Research Maatschappij B.V.: *See*—
Austermuhle-Bertola, Helena, 4,211,720, Cl. 260-464.000.
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Entwistle, Ian D.; and Johnstone, Robert A. W., 4,211,727, Cl. 568-437.000.
Roman, Steven A.; and Soloway, Samuel B., 4,211,789, Cl. 424-285.000.
Roman, Steven A.; and Soloway, Samuel B., 4,211,792, Cl. 424-304.000.
Swanson, Benjamin F., 4,211,106, Cl. 73-38.000.
Szakasits, Julius J.; and Wadham, Thomas C., 4,211,340, Cl. 222-3.000.
Tieman, Charles H., 4,211,780, Cl. 424-246.000.
Shelton, Glenmore L., Jr.: *See*—
Panissidi, Hugo A.; Shelton, Glenmore L., Jr.; and Will, Peter M., 4,211,147, Cl. 91-184.000.
Shephard, Philip C., to I. H. W. Engineering Limited. Seat reclining mechanism. 4,211,451, Cl. 297-362.000.
Shepherd, Robert G., to American Cyanamid Company. Hypolipidemic and antiatherosclerotic novel 4-(aralkyl- and heteroarylalkylamino)phenyl compounds. 4,211,783, Cl. 424-263.000.
Shibata, Shinya: *See*—
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,211,892, Cl. 179-1.0SM.

Shibata, Tatsuo: *See*—
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Shimalla, Charles J.: *See*—
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Shimizu, Munetaka; and Takeda, Yoshimasa, to Copal Company Limited. Paper cutting and perforated line forming device of printer. 4,211,498, Cl. 400-621.000.
Shin-Etsu Polymer Co., Ltd.: *See*—
Sado, Ryoichi; and Nei, Koichi, 4,211,890, Cl. 174-68.500.
Shinkawa, Keiro; Shoyama, Hiroji; and Sodeyama, Chuichi, to Hitachi, Ltd. Mixer circuit arrangement. 4,211,977, Cl. 455-326.000.
Shinopulos, George; Randlett, M. Ronald; and Bower, Terry F., to Kennecott Copper Corporation. Method for continuous casting of metallic strands at exceptionally high speeds. 4,211,270, Cl. 164-83.000.
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Shiono, Hidemi: *See*—
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Narisada, Masayuki; Tsuji, Teruji; Matsumura, Hiromu; and Nagata, Wataru, 4,211,779, Cl. 424-246.000.
Shipman, Gene H., to Minnesota Mining and Manufacturing Company. Multilayer composite films and method of manufacture thereof. 4,211,825, Cl. 428-483.000.
Short, Edward H., III: *See*—
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Shinkawa, Keiro; Shoyama, Hiroji; and Sodeyama, Chuichi, 4,211,977, Cl. 455-326.000.
Shu, Stephen K.; and Squires, W. David, to Del Mar Avionics. Apparatus and method for recording and playing back electrocardial signals. 4,211,238, Cl. 128-700.000.
Shultz, William E., Sr. Seal puller. 4,211,446, Cl. 294-26.000.
Shurgan, Joel: *See*—
Bickford, Elwood D.; and Shurgan, Joel, 4,211,958, Cl. 315-312.000.
Sibalis, Dan. Tampon with a collapsible and invertible shroud. 4,211,225, Cl. 128-285.000.
Sichenzia, James, to Venus Scientific Inc. D.C. to D.C. Converter utilizing resonant inductor to neutralize capacitive losses. 4,212,053, Cl. 363-39.000.
Sickler, Emory J., to J. I. Case Company. Heating system for a revolving cab. 4,211,364, Cl. 237-12.30A.
Sidorova, Galina D.: *See*—
Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M., 4,211,557, Cl. 75-77.000.
Sidwell, Jeffrey: *See*—
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Siegfried AG: *See*—
Thiele, Kurt; Ahmed, Quazi; Scharen, Walter; and Meyer, Jacques, 4,211,551, Cl. 71-116.000.
Siemens Aktiengesellschaft: *See*—
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Eckert, Joachim; and Spirk, Franz, 4,211,946, Cl. 310-212.000.
Fischer, Philipp-Josef; and Reier, Richard, 4,211,494, Cl. 400-124.000.
Grunleitner, Hans; Kogler, Georg; Kohnlein, Hans; and Tschirner, Peter, 4,211,962, Cl. 318-254.000.
Habedank, Klaus-Dieter; and Troebel, Werner, 4,211,906, Cl. 200-330.000.
Muller, Karl-Heinz; Krisch, Burkhard; Rindfleisch, Volker; and Neuendorff, Hans F. R., 4,211,924, Cl. 250-311.000.
Prey, Gerhard, 4,212,060, Cl. 364-200.000.
Ptacnik, Edmund; and Trainer, Carl, 4,211,899, Cl. 179-175.20C.
Stein, Karl-Ulrich; Herbst, Heiner; and Widmann, Dietrich, 4,211,888, Cl. 136-225.000.
Troebel, Werner, 4,211,907, Cl. 200-318.000.
Walter, Karl H., 4,212,010, Cl. 340-784.000.
Sigma Chemical Company: *See*—
Das, Manik L., 4,211,531, Cl. 23-230.00B.
Sigri Elektrographit Gesellschaft mit Beschrankter Haftung: *See*—
Freitag, Gunter; Krahl, Alfred; Ullmann, Gerhard; and Wenzel, Gunter, 4,211,594, Cl. 156-158.000.
Sih, John C., to Upjohn Company, The. Esters of prostacyclin-type compounds. 4,211,879, Cl. 560-53.000.
Silka, Adolf N.: *See*—
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Silver, Harold K.: *See*—
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Simmonds Precision Products, Inc.: *See*—
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Simonelic, George B.: *See*—
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Sims, Bernard: *See*—
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Singer Company, The: *See*—
Graham, Thomas G., 4,211,177, Cl. 112-221.000.
Papajewski, Reinhold; Holl, Helmar; and Schmedtkord, Ulrich, 4,211,373, Cl. 242-20.000.
Peterson, Wesley R., 4,211,178, Cl. 112-258.000.
Sirgo, Valdeko H.: *See*—
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Sistig, Helmut: *See*—
Mueller, Achim; Peetz, Hans-Dieter; Scheeren, Peter; Sistig, Helmut; and Schallenberg, Andreas, 4,211,181, Cl. 118-411.000.
Sivachenko, Eugene W. High strength corrugated metal plate and method of fabricating same. 4,211,504, Cl. 405-284.000.
Skaggs, Boyd T., to Container Corporation of America. Partition. 4,211,355, Cl. 229-15.000.
SKF Industrial Trading and Development Co. B.V.: *See*—
Johansson, Carl E., 4,211,453, Cl. 308-8.200.
Skovgaard, Leif O. Thermal insulating and cushioned bag, especially a carrying bag. 4,211,267, Cl. 150-2.100.
Sleeter, Michael R.; and Dehring, James C., to Owens-Corning Fiberglas Corporation. Pipe testing machine with clamping pressure keyed to hydrostatic test pressure. 4,211,107, Cl. 73-49.600.
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Lopez, Carlos; Watanabe, Kyoichi A.; Reichman, Uri; and Fox, Jack J., 4,211,773, Cl. 424-180.000.
Slowinski, Stanislaw; Vasina, Stanislaw; Pasich, Jerzy; Kosek, Jerzy; and Glownia, Stanislaw, to Przedsiegiorstwo Projektowania I Wyposazania Odlewni "Prodlew". Equipment for cooling and separation of castings and moulding sand. 4,211,274, Cl. 164-401.000.
Small Business Administration: *See*—
Naylor, James E., 4,211,496, Cl. 400-124.000.
Small, William. Hydroponic gardening apparatus. 4,211,035, Cl. 47-62.000.
Smiley, Robert A., to Du Pont de Nemours, E. I., and Company. Formaldehyde stabilization of acrylonitrile against color. 4,211,722, Cl. 260-465.300.
Smirnov, Alexandr S.: *See*—
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.
Smith, Arnold R., to Bell Telephone Laboratories, Incorporated. Method for wiring electrical bays. 4,210,999, Cl. 29-857.000.
Smith, Charles T.: *See*—
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Smith, Edmund H., Jr.: *See*—
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Smith, Harry: *See*—
Buckle, Derek R.; and Smith, Harry, 4,211,791, Cl. 424-304.000.
Smith, Herman W., to Upjohn Company, The. Aromatic analogs of 4,5,13,14-tetradehydro-PGI$_1$ compounds. 4,211,713, Cl. 260-346.730.
Smith, Herman W., to Upjohn Company, The. 2,2-Difluoro-trans-4,5,13,14-tetrahydro-PGI$_1$ compounds. 4,211,714, Cl. 260-346.730.
Smith, Herman W., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-3,7-inter-m-phenylene-13,14-didehydro-PGF compounds. 4,211,884, Cl. 568-807.000.
Smith International, Inc.: *See*—
Kellner, Jackson M., 4,211,291, Cl. 175-17.000.
Smith, Jack. Alarm and locking device to prevent theft of an article. 4,211,995, Cl. 340-63.000.
Smith, Joseph S.: *See*—
Akers, Larry D.; Scholl, Charles H.; Smith, Joseph S.; and Williams, Edward A., 4,211,262, Cl. 141-2.000.

Smith, Leslie H., to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,211,878, Cl. 549-78.000.

Smith, Lowell S.; and Brisken, Axel F., to General Electric Company. Front surface matched piezoelectric ultrasonic transducer array with wide field of view. 4,211,948, Cl. 310-322.000.

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Brisken, Axel F.; and Smith, Lowell S., 4,211,949, Cl. 310-322.000.

Smith, Peter: *See*—
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Smith, Randall C., to Mesa Engineering, Inc. Dual mode music instrument amplifier. 4,211,893, Cl. 179-1.00A.

Smith, Robin, to Marconi Company Limited, The. Control circuits. 4,211,982, Cl. 328-138.000.

Smith, William. Simulated football game. 4,211,410, Cl. 273-94.000.

SmithKline Corporation: *See*—
Berges, David A., 4,211,703, Cl. 548-112.000.

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Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K., 4,211,626, Cl. 204-243.00M.

Snyder, David E., to U.S. Industries, Inc. Pressure relief valve. 4,211,250, Cl. 137-514.000.

Sobolewski, Annette M.: *See*—
Richardson, Larry D.; and Sobolewski, Annette M., 4,211,449, Cl. 297-126.000.

Societa Farmaceutici Italia (Farmitalia Carlo Erba S.p.A.): *See*—
Vicario, Gian P.; Penco, Sergio; and Arcamone, Federico, 4,211,864, Cl. 536-17.00A.

Societe Anonyme de Telecommunications: *See*—
Koreicho, Wladimir, 4,211,485, Cl. 356-5.000.

Societe Anonyme Francaise du Ferodo: *See*—
Fenart, Jean-Claude, 4,211,315, Cl. 192-70.270.

Societe Chimique des Charbonnages: *See*—
Hubert, Jacques; and Ory, Jean-Marie, 4,212,005, Cl. 340-603.000.

Societe d'Etude du Radant: *See*—
Chekroun, Claude, 4,212,014, Cl. 343-754.000.

Societe Nationale des Poudres et Explosifs: *See*—
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Societe Nationale Industrielle Aerospatiale: *See*—
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Societe pour l'Equipement de Vehicules: *See*—
Poirier d'Ange d'Orsay, Emmanuel J. H., 4,211,196, Cl. 123-439.000.

Sodeyama, Chuichi: *See*—
Shinkawa, Keiro; Shoyama, Hiroji; and Sodeyama, Chuichi, 4,211,977, Cl. 455-326.000.

Soldan, Lyle H.: *See*—
Nissen, Roland N.; and Soldan, Lyle H., 4,211,213, Cl. 126-452.000.

Solodkov, Vyacheslav I.: *See*—
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulskov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.

Solomin, Vladimir A.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; and Zvezdunov, Dmitry A., 4,211,943, Cl. 310-13.000.

Soloway, Samuel B.: *See*—
Roman, Steven A.; and Soloway, Samuel B., 4,211,789, Cl. 424-285.000.
Roman, Steven A.; and Soloway, Samuel B., 4,211,792, Cl. 424-304.000.

Sonetaka, Kazunori; Nishino, Atsushi; and Kimura, Kunio, to Matsushita Electric Industrial Co., Ltd. Supported catalyst for purifying gas and method of manufacturing the same. 4,211,672, Cl. 252-455.00R.

Sony Corporation: *See*—
Tooyama, Akira; Ohkoshi, Akio; Tooyama, Takashi; Yukawa, Takahiro; and Hosono, Takashi, 4,212,030, Cl. 358-67.000.

Sorensen, Fred L.: *See*—
Puhak, Peter G.; Bilynsky, John D.; and Sorensen, Fred L., 4,211,465, Cl. 339-144.00T.

Sorokin, German P.: *See*—
Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U., 4,211,916, Cl. 371-15.000.

Souliere, Ernest G.: *See*—
Hunt, Ronald E.; and Souliere, Ernest G., 4,211,499, Cl. 400-637.600.

Southwire Company: *See*—
Berry, Milton E.; and Pariani, Ronald L., 4,211,555, Cl. 75-72.000.
Ward, George C., 4,211,271, Cl. 164-87.000.

Spahrkas, Heinrich; Muller, Josef; Komarek, Ernst; and Luck, Wolfhard, to Bayer Aktiengesellschaft. Chrome-tanning. 4,211,529, Cl. 8-94.260.

Spector, George: *See*—
Reyes, Daniel; and Spector, George, 4,212,007, Cl. 340-691.000.

Speil, Peter, to BBC Brown Boveri & Company Limited. Blade structure for fluid flow rotary machine. 4,211,516, Cl. 416-191.000.

Spencer Wright Industries, Inc.: *See*—
Price, Herbert B., 4,211,176, Cl. 112-79.00R.

Sperry Corporation: *See*—
Decoene, Frans J. G. C., 4,211,059, Cl. 56-94.000.

Spirk, Franz: *See*—
Eckert, Joachim; and Spirk, Franz, 4,211,946, Cl. 310-212.000.

Spitz, Joseph J.: *See*—
Hein, Carl C.; Silver, Harold K.; Spitz, Joseph J.; and Seidler, Donald W., 4,211,326, Cl. 206-484.000.

Springmann, Helmut, to Linde Aktiengesellschaft. Compression of nitrogen overhead from high pressure column in tractionation of air. 4,211,544, Cl. 62-30.000.

SPS Technologies, Inc.: *See*—
Tambini, Angelo L., 4,211,120, Cl. 73-761.000.

Squires, W. David: *See*—
Shu, Stephen K.; and Squires, W. David, 4,211,238, Cl. 128-700.000.

Sramek, Elmer D., to Redington Inc. Cartoner for elongated articles and components thereof. 4,211,054, Cl. 53-502.000.

Stachnik, Joseph: *See*—
Jamgochian, Ralph; Oley, Leonard; Stachnik, Joseph; and Tutella, Alfred L., 4,211,342, Cl. 222-129.400.

Stackpole Components Company: *See*—
Quigley, Thomas J., 4,211,900, Cl. 200-5.00R.
Quigley, Thomas J., 4,211,905, Cl. 200-295.000.

Stahl, Edward L.; Sanders, Ellsworth E.; and Blair, George C., to Pinckney Molded Plastics, Inc. Stack and nest container. 4,211,327, Cl. 206-505.000.

Stalherm, Dieter: *See*—
Bocsanczy, Janos; and Stalherm, Dieter, 4,211,611, Cl. 202-262.000.

Standard Oil Company (Indiana): *See*—
Barkis, Edward; Crummer, Robert R.; and Joyner, James M., 4,211,692, Cl. 260-45.70P.
Bertolacini, Ralph J.; and Yu, Albert P., 4,211,634, Cl. 208-59.000.
Hoff, Glen R., 4,211,671, Cl. 252-431.00N.
Horsfield, Sydney G.; Kuhlmann, George E.; and Bemis, Alan G., 4,211,881, Cl. 562-416.000.

Standard Telephones and Cables Limited: *See*—
Drewery, John O., 4,212,028, Cl. 358-11.000.

Stanley, Richard D.: *See*—
Kubach, John S.; and Stanley, Richard D., 4,211,224, Cl. 128-283.000.

Starcevic, Mihailo, to BBC Brown Boveri & Company Limited. Arrangement for supporting vertical-axis machine housing. 4,211,383, Cl. 248-603.000.

Stauber, Ronald C.: *See*—
Lillegard, Thomas R.; Rollins, Richard A.; and Stauber, Ronald C., 4,211,380, Cl. 248-229.000.

Steelman, Carrol D.; and Chambers, Doyle M., to Louisiana State University Board of Supervisors. Use of carbothiolates as insecticides. 4,211,778, Cl. 424-244.000.

Steensma, Peter D., to International Telephone and Telegraph Corporation. Method and apparatus to provide a secure optical communication system. 4,211,468, Cl. 350-96.100.

Steffen, Klaus-Dieter, to Dynamit Nobel Aktiengesellschaft. Process of preparing 3-bromophthalide. 4,211,710, Cl. 260-343.30R.

Steigerwald, Robert L., to General Electric Company. High efficiency circuit for rapidly charging batteries. 4,211,969, Cl. 320-14.000.

Stein, Karl-Ulrich; Herbst, Heiner; and Widmann, Dietrich, to Siemens Aktiengesellschaft. Arrangement with several thermal elements in series connection. 4,211,888, Cl. 136-225.000.

Stein, Philip C. Centrifugally compensated seal for sealing between concentric shafts. 4,211,424, Cl. 277-25.000.

Steinke, Leo: *See*—
Glauner, Jens; Kauhl, Gunther; Pflug, Hannes; Steinke, Leo; and Weyl, Helmut, 4,211,204, Cl. 123-145.00A.

Stenling, Lars, to Nitro Consult AB. Measuring and recording device for monitoring vibrations caused by blasting. 4,212,086, Cl. 367-178.000.

Stenzenberger, Horst, to Technochemie GmbH Verfahrenstechnik. Thermosetting imide resins from dihydrazide of dicarboxylic acid. 4,211,860, Cl. 528-312.000.

Stenzenberger, Horst, to Technochemie GmbH Verfahrenstechnik. Thermosetting imide resins from amino acid hydrazide. 4,211,861, Cl. 528-322.000.

Stepanov, Anatoly M.: *See*—
Vasilinina, Olga V.; Kidyashev, Jury K.; Potapov, Valery N.; Ryabikov, Stanislav V.; Stepanov, Anatoly M.; and Strebkov, Dmitry S., 4,211,581, Cl. 136-89.0CA.

Stettiner, Robert L.: *See*—
Adleman, George L.; and Stettiner, Robert L., 4,212,009, Cl. 340-728.000.

Steudten, Friedrich; and Koppl, Franz, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for machining silicon rods and tubes by abrasion. 4,211,040, Cl. 51-42.000.

Steward, Raymond G.; Boyd, Stuart G.; and Civardi, Frank P., to Inmont Corporation. Method of making perforated contoured trim panel. 4,211,590, Cl. 156-79.000.

Stewart, Donald M.: *See*—
Heimburg, Richard W.; and Stewart, Donald M., 4,210,995, Cl. 29-157.00R.

Stewart Stamping Corporation, a division of Insilco Corp.: *See*—
Wolfthal, Maurice, 4,211,462, Cl. 339-103.00M.

Stewart, William J., to Plessey Handel und Investments AG. Optical fibre connector. 4,211,470, Cl. 350-96.210.

Stierlen-Maquet Aktiengesellschaft: *See*—
Junginger, Klaus M.; and Kieferle, Hermann, 4,211,998, Cl. 340-171.00R.

Stiles, Kenneth M., to Air Logistics Corporation. Production of optical fiber cables. 4,211,591, Cl. 156-83.000.

Stog, Wilhelm, to WSW Stahl- und Wasserbau GmbH. Device for collecting emissions rising from a quenching car of a battery of coke ovens. 4,211,612, Cl. 202-263.000.

Stoll, Kurt; Hinder, Herbert; and Corpus, Nikolaus, to Heinrich Prinkmann Anlagenvernachtung. Laboratory hood. 4,211,155, Cl. 98-115.0LH.

Stoltzman, Gary L. Portable golf ball washer. 4,210,974, Cl. 15-21.00A.

Stone, Kirby L.: *See*—
Wisbey, Jerry D.; and Stone, Kirby L., 4,211,255, Cl. 137-625.480.

Stoody, William R. Sack retention and pressurizing for aerosol type dispensers. 4,211,344, Cl. 222-131.000.

Story, Albert G., to Union Carbide Corporation. Ectating ring shirring method and apparatus. 4,210,981, Cl. 17-45.000.

Stotz, Manfred: *See*—
Kohler, Werner; Drucker, Gerhard; Kiess, Ulrich; and Stotz, Manfred, 4,211,831, Cl. 429-78.000.

Stowell, William R. Method of creating an electric field for shark repellent. 4,211,980, Cl. 455-40.000.

Strange, Donald R.: *See*—
Knoll, Glenn F.; Strange, Donald R.; and Bennett, Matthew C., Jr., 4,212,061, Cl. 364-414.000.

Strasser, Peter. Clamping frame for making rectangular frames, particularly picture frames. 4,211,391, Cl. 269-41.000.

Strebkov, Dmitry S.: *See*—
Vasilinina, Olga V.; Kidyashev, Jury K.; Potapov, Valery N.; Ryabikov, Stanislav V.; Stepanov, Anatoly M.; and Strebkov, Dmitry S., 4,211,581, Cl. 136-89.0CA.

Streicher, Max, to Fordertechnik Streicher GmbH. Eccentric disc pump. 4,211,521, Cl. 418-48.000.

Streiff, Felix: *See*—
Grosz-Roll, Friedrich; Schutz, Gerhard; and Streiff, Felix, 4,211,277, Cl. 165-109.00T.

Strock, Alvin E. Oral health and hygiene kit. 4,211,330, Cl. 206-581.000.

Strotkotter, Heinrich: *See*—
Rocchio, Rodolfo; Naumann, Fritz; and Strotkotter, Heinrich, 4,211,200, Cl. 123-445.000.

Sturtz, Charles R., Jr., to Clark Equipment Company. Circulating flow hydraulic pilot system. 4,211,256, Cl. 137-625.640.

Su, Tien-Kuei: *See*—
Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., 4,211,725, Cl. 260-583.00P.

Subbteo Sports Games Limited: *See*—
Tickle, Roy P., 4,211,408, Cl. 273-85.00R.

Sugalski, Raymond K., to General Electric Company. Battery charger adapter. 4,211,968, Cl. 320-2.000.

Sugawara, Yoshitaka; and Kamei, Tatsuya, to Hitachi, Ltd. Solid-state switching circuit employing photon coupling suitable for construction in form of integrated circuit. 4,212,024, Cl. 357-38.000.

Sugio, Akitoshi; and Kawaki, Takeo, to Mitsubishi Gas Chemical Company, Inc. Method for producing polyphenylene oxides. 4,211,857, Cl. 528-215.000.

Sugita, Mitsuyuki: *See*—
Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirobumi, 4,211,947, Cl. 310-312.000.

Sullivan, C. Gardner, II: *See*—
Hedges, Walter P.; and Sullivan, C. Gardner, II, 4,211,933, Cl. 307-35.000.

Sulzer Brothers Ltd.: *See*—
Baumgartner, Peter; and Kuhne, Robert, 4,211,192, Cl. 123-90.600.
Grosz-Roll, Friedrich; Schutz, Gerhard; and Streiff, Felix, 4,211,277, Cl. 165-109.00T.

Suminoe, Taro; Ito, Tetsuo; and Masuhara, Eiichi, to Japan Synthetic Rubber Co., Ltd. Dental hydraulic investment. 4,211,682, Cl. 260-29.300.

Sumitomo Aluminium Smelting Company, Limited: *See*—
Yamada, Koichi; Yoshihara, Masao; Ishida, Takahiro; and Sato, Kazuo, 4,211,667, Cl. 252-313.00R.

Sumitomo Chemical Company, Limited: *See*—
Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; Kamio, Kunimasa; Matsushima, Shunsuke; Hata, Kazuhiko; and Mashita, Kentaro, 4,211,715, Cl. 260-348.640.
Kato, Yasuyuki; and Moritani, Masahiko, 4,211,742, Cl. 264-216.000.

Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Asian Industry Co., Ltd. Fuel supply apparatus for internal combustion engines. 4,211,201, Cl. 12-463.000.

Sunami, Hideo, to Hitachi, Ltd. Method for fabricating a field effect transistor. 4,210,993, Cl. 29-571.000.

Sunlite Plastics, Inc.: *See*—
Ostoich, Eli, 4,211,741, Cl. 264-173.000.

Superior Valve Company: *See*—
Yocum, William C.; and Hughes, David E., 4,211,386, Cl. 251-122.000.

Sutter, David L., to Hussey Manufacturing Company, Inc. Release mechanism for rows of collapsible seats. 4,211,450, Cl. 297-232.000.

Sutz, Richard K. Wind machine system for pushing and lifting loads and having improved counterbalancing. 4,211,126, Cl. 74-590.000.

Suzuki, Isao; Yomogida, Toshihiko; and Kato, Sadamu, to Toyoda-Koki Kabushiki-Kaisha. Programmable sequence controller with auxiliary function decoding circuit. 4,212,081, Cl. 364-900.000.

Suzuki, Kanekichi: *See*—
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and Ishii, Kyoko, administrator, 4,211,118, Cl. 73-592.000.

Suzuki, Katsuhito: *See*—
Asano, Hideki; Kokaku, Hiroyoshi; Suzuki, Katsuhito; and Saida, Kenichi, 4,211,690, Cl. 260-42.460.

Suzuki, Masaharu; Taniguchi, Takashi; and Yamagishi, Hideki, to Toray Industries, Inc. Tintable coatings and articles having such coatings. 4,211,823, Cl. 428-412.000.

Suzuki, Nobuo; Sashihara, Kenji; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Method of producing light-sensitive composition for use in thermally developable light-sensitive elements and elements so produced. 4,211,839, Cl. 430-619.000.

Swalls, Billy J.: *See*—
Rickert, Raymond E.; and Swalls, Billy J., 4,211,251, Cl. 137-565.000.

Swanson, Arthur P. Golf club. 4,211,416, Cl. 273-164.000.

Swanson, Benjamin F., to Shell Oil Company. Estimates of permeability from capillary pressure measurements. 4,211,106, Cl. 73-38.000.

Sway, Boris. Method of and apparatus for treating water. 4,211,649, Cl. 210-37.00R.

Sweet, Donald B., to Material Control, Inc. Level control sensor switch mechanism. 4,211,966, Cl. 318-482.000.

Swenson, Donald A., to United States of America, Energy. Alternating phase focused linacs. 4,211,954, Cl. 315-5.410.

Swiss Aluminium Ltd.: *See*—
Morianz, Josef V., 4,211,275, Cl. 164-440.000.
Pryor, Michael J.; Popplewell, James M.; and Anthony, William H., 4,211,827, Cl. 428-654.000.

Switall, Thomas G., to Ryco Graphic Manufacturing, Inc. Spray dampening system for offset printing with page control assembly. 4,211,258, Cl. 137-862.000.

Sybron Corporation: *See*—
Mehra, Ravinder C.; and Hepinstall, James T., Jr., 4,211,346, Cl. 222-205.000.
Woltosz, Stanley N., 4,211,230, Cl. 128-303.170.

Sychev, Anatoly P.; Kim, Georgy V.; Larin, Valentin F.; Sidorova, Galina D.; Vikharev, Ivan G.; Kuur, Vyacheslav P.; Akhmetov, Raul S.; Moiseev, Georgy L.; Maslov, Vladimir I.; Kabachek, Vladimir G.; and Cherednik, Igor M. Method for processing lead storage-battery scrap. 4,211,557, Cl. 75-77.000.

Sykes, Willard D. Wire spring forming machine. 4,211,100, Cl. 72-131.000.

Symonds, David G.: *See*—
Benson, Nigel C.; Hughes, John M. F.; Kingslake, Denis; and Symonds, David G., 4,210,987, Cl. 26-89.000.

Symons, Carl R.: *See*—
Kwasnoski, Daniel; and Symons, Carl R., 4,211,608, Cl. 201-41.000.

Syngas Company: *See*—
Akell, Robert B.; Muller, Werner C.; and Pick, Rudolph, 4,211,638, Cl. 208-180.000.

Synkoski, Richard: *See*—
Brummel, Allan J.; Hodur, Neil R.; and Synkoski, Richard, 4,211,476, Cl. 351-160.00R.

Szabo, Imre Z.; Nagy, Kornel; and Finta, Csaba, to Magyar Vagon-es Gepgyar. Method for measuring the damping coefficient of torsional-vibration dampers. 4,211,105, Cl. 73-11.000.

Szakasits, Julius J.; and Wadham, Thomas C., to Shell Oil Company. Catalyst regeneration. 4,211,340, Cl. 222-3.000.

Szpindel, Motek: *See*—
Davis, John C. H.; Natarajan, Krishnaswamy; Cihal, Jan; Szpindel, Motek; and Sidwell, Jeffrey, 4,211,895, Cl. 179-18.00J.

Tabak, Samuel A.; and Morrison, Roger A., to Mobil Oil Corporation. Manufacture of benzene, toluene and xylene. 4,211,886, Cl. 585-321.000.

Taga, Yoshihito: *See*—
Yoshida, Nagatoshi; and Taga, Yoshihito, 4,211,909, Cl. 219-10.55R.

Taguchi, Tadashi; Fujikawa, Noboru; Kohno, Mitsuo; Yoshitake, Katsumi; and Satake, Kunio, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing image using laminated oriented cover film. 4,211,560, Cl. 430-313.000.

Taira, Toshiji, to Nippondenso Co., Ltd. Electric horn. 4,212,001, Cl. 340-388.000.

Tait, Scott J.: *See*—
Friedman, Alexander A.; and Tait, Scott J., 4,211,647, Cl. 210-17.000.

Tajima, Yusuke, to Tokyo Shibaura Denki Kabushiki Kaisha. Strip line coupler having spaced ground plate for increased coupling characteristic. 4,211,986, Cl. 333-116.000.

Takahashi, Kazuhisa: *See*—
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,212,019, Cl. 357-13.000.

Takahashi, Kazuo: *See*—
Nishina, Yoshio; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,211,835, Cl. 430-403.000.

Takahashi, Nobuaki, to Victor Company of Japan, Limited. Cross-talk component cancellation circuit in an angle-modulated wave signal transmission system. 4,211,978, Cl. 455-295.000.

Takamiya, Saburo: *See*—
Wataze, Manabu; Takahashi, Kazuhisa; Takamiya, Saburo; and Mitsui, Shigeru, 4,212,019, Cl. 357-13.000.

Takara Shuzo Co., Ltd.: *See*—
Matsumura, Shingo; Ozaki, Masakuni; Watanabe, Hisao; Kuroda, Hiroyuki; Nakamura, Teruya; and Obayashi, Akira, 4,211,866, Cl. 536-53.000.

Takashima, Tadao: *See*—
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, 4,211,552, Cl. 75-24.000.

Takasuna, Tsuneyoshi: *See*—
Itoh, Masaaki; Takasuna, Tsuneyoshi; Ishikawa, Yuichi; Kimura, Hideyuki; and Musoh, Masanori, 4,211,276, Cl. 165-1.000.

Takeda Chemical Industries, Ltd.: *See*—
Okada, Hiroaki; Yamazaki, Iwao; and Yashiki, Takatsuka, 4,211,769, Cl. 424-177.000.
Takeda, Yoshimasa: *See*—
Shimizu, Munetaka; and Takeda, Yoshimasa, 4,211,498, Cl. 400-621.000.
Takeda, Yuji: *See*—
Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.
Takeuchi, Yuzo: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.
Tamai, Masayoshi, to Fuji Xerox Co., Ltd. Deflection electrode assembly for multi-nozzle ink jet printers. 4,212,017, Cl. 346-75.000.
Tamanaga, Shinichi: *See*—
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.
Tambini, Angelo L., to SPS Technologies, Inc. Tightening apparatus. 4,211,120, Cl. 73-761.000.
Tamburelli, Giovanni, to CSELT—Centro Studi e Laboratori Telecomunicazioni S.p.A. Fiber-optical system for transmitting multilevel signals. 4,211,929, Cl. 250-55.000.
Tanaka, Junzo: *See*—
Kusunoki, Shigeru; and Tanaka, Junzo, 4,211,910, Cl. 219-10.55D.
Tanaka, Tomio; and Yamano, Rinzo, to Kubota, Ltd. Offset tractor. 4,211,298, Cl. 180-75.000.
Tanaka, Toru: *See*—
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; and Akagi, Kimiko, 4,211,882, Cl. 562-416.000.
Tanaka, Yoshio; Shibata, Tatsuo; Matsuo, Tatsuo; Takashima, Tadao; and Hori, Sankichi, to IRI-E Kosan Corporation; and Nippon Steel Corporation. Method for processing molten slag. 4,211,552, Cl. 75-24.000.
Taniguchi, Takashi: *See*—
Suzuki, Masaharu; Taniguchi, Takashi; and Yamagishi, Hideki, 4,211,823, Cl. 428-412.000.
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, to Sharp Kabushiki Kaisha. Synthetic-speech calculators. 4,211,892, Cl. 179-1.0SM.
Taniwaki, Genshi, to Kongo Co., Ltd. Door assembly. 4,211,039, Cl. 49-361.000.
Tapper, Robert. Iontophoretic burn-protection method. 4,211,222, Cl. 128-207.210.
Tarzia, Giorgio; and Panzone, Gianbattista, to Gruppo Lepetit S.p.A. Aminopyrrole derivatives. 4,211,708, Cl. 260-326.460.
Tarzia, Giorgio; and Panzone, Gianbattista, to Gruppo Lepetit S.p.A. Aminopyrrole derivatives. 4,211,709, Cl. 260-326.470.
Tate, Clarence R., to Thalatta, Inc. Process of microencapsulation and products thereof. 4,211,668, Cl. 252-316.000.
Taubenmann, Peter, to Krauss-Maffei Aktiengesellschaft. Apparatus for the feeding (metering) of liquid synthetic-resin components. 4,211,345, Cl. 222-134.000.
Tausig, Wayne R., to United States of America, Navy. Breakaway pin release. 4,211,502, Cl. 403-324.000.
Tawse, Ian S., to Gen-Tech, Inc. Multi-voltage and multi-frequency alternator/generator of modular construction. 4,211,945, Cl. 310-112.000.
Teague, Walter D., Jr.; and Sempliner, Arthur T. Fluid line and connection for fluid-driven appliance. 4,210,975, Cl. 15-22.00R.
Technical Operations, Incorporated: *See*—
Parsons, George W., Jr.; and Munro, John J., III, 4,211,928, Cl. 250-497.000.
Technochemie GmbH Verfahrenstechnik: *See*—
Stenzenberger, Horst, 4,211,860, Cl. 528-312.000.
Stenzenberger, Horst, 4,211,861, Cl. 528-322.000.
Tedrow, Joe E. Tool box accessory cabinet. 4,211,455, Cl. 312-198.000.
Teitel, Robert J. Hydrogen supply method. 4,211,537, Cl. 48-191.000.
Tekma Kinomat S.p.A.: *See*—
Camardella, Giuseppe, 4,211,913, Cl. 219-56.220.
Tektronix, Inc.: *See*—
Reed, Douglas A., 4,211,603, Cl. 156-659.100.
Telecommunications Radioelectrique et Telephoniques T.R.T.: *See*—
Ferrieu, Gilbert M. M., 4,211,896, Cl. 179-18.0FA.
Temkin, Naum E.: *See*—
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.
Templeton Coal Co., Inc.: *See*—
Rickert, Raymond E.; and Swalls, Billy J., 4,211,251, Cl. 137-565.000.
Teramura, Hiroichi: *See*—
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,035, Cl. 358-260.000.
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,036, Cl. 358-261.000.
Texaco Inc.: *See*—
Lewellen, Philip C.; Gates, Walter C., Jr.; and Duranleau, Roger G., 4,211,673, Cl. 252-462.000.
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,212,070, Cl. 364-500.000.
Westbrook, Clifton W.; Parcell, Lloyd J.; Claytor, Gary L.; and Klock, Byron V., 4,211,646, Cl. 210-15.000.
Texas Instruments Incorporated: *See*—
Rao, G. R. Mohan, 4,212,083, Cl. 365-154.000.
Textron, Inc.: *See*—
Scott, George W., 4,210,985, Cl. 24-205.16R.
Th. Goldschmidt AG: *See*—
Kollmeier, Hans-Joachim; and Rossmy, Gerd, 4,211,849, Cl. 521-164.000.
Thackery, Russell H. Log splitting apparatus. 4,211,265, Cl. 144-194.000.
Thalatta, Inc.: *See*—
Tate, Clarence R., 4,211,668, Cl. 252-316.000.
Thatcher, Arthur K.; and McCarter, Ed R., to Thatcher, Arthur K. Computer controlled sonic fuel system. 4,211,199, Cl. 123-445.000.
Thelwell, William H.: *See*—
Fenn, Cyril P.; and Thelwell, William H., 4,211,131, Cl. 83-56.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft mbH. Mobile apparatus for the continuous replacement of an old track by a new track. 4,211,170, Cl. 104-2.000.
Thibault, Annie: *See*—
Fauran, Francois; Feniou, Claude; Mosser, Jacqueline; Thibault, Annie; Andre, Claude; and Prat, Gisele, 4,211,772, Cl. 424-180.000.
Thiele, Kurt; Ahmed, Quazi; Scharen, Walter; and Meyer, Jacques, to Siegfried AG. Herbicide. 4,211,551, Cl. 71-116.000.
Thielke, John F.: *See*—
Pilat, Michael J.; Powell, Edward B., Jr.; and Thielke, John F., 4,211,116, Cl. 73-421.50A.
Thievessen, Karl: *See*—
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Thomae, Martin H.: *See*—
Ross, James W., Jr.; Amass, Charles E.; Baer, Charles S.; and Thomae, Martin H., 4,211,623, Cl. 204-195.00M.
Thomas, Charles W., Jr., to Furman, Leonard, a part interest. Air/fuel mixing arrangement for an internal combustion engine. 4,211,198, Cl. 123-592.000.
Thomas, Robert C. Water reclamation process. 4,211,650, Cl. 210-44.000.
Thomas, Robert C. Water reclamation process. 4,211,651, Cl. 210-44.000.
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Thompson, Teresa J.: *See*—
Kluger, Edward W.; Su, Tien-Kuei; and Thompson, Teresa J., 4,211,725, Cl. 260-583.00P.
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Massies, Jean; and Nuyen, Tronc L., 4,211,587, Cl. 148-187.000.
Thornberry, William E.: *See*—
Bresson, Clarence R.; and Thornberry, William E., 4,211,013, Cl. 33-147.00R.
Thorsell, Roland H.; and Pyle, Stoddard H., to Excor, Inc. Self-aligning fence for radial arm saw. 4,211,134, Cl. 83-471.300.
Thyssen Industrie AG: *See*—
Prischmann, Karl H., 4,211,260, Cl. 138-143.000.
Tickle, Roy P., to Subbteo Sports Games Limited. Figure unit for sports games. 4,211,408, Cl. 273-85.00R.
Tieman, Charles H., to Shell Oil Company. 2,2-(Thiobis(nitromethylidyne))bis(tetrahydro-2H-1,3-thiazine) and use. 4,211,780, Cl. 424-246.000.
TII Corporation: *See*—
Napiorkowski, John, 4,212,047, Cl. 361-124.000.
Tile Council of America, Inc.: *See*—
Wagner, Herman B.; and Ellis, Jeffrey R., 4,211,572, Cl. 106-90.000.
Timber Conversion, Inc.: *See*—
Frey, Lawrence A.; Harrison, Robert E.; and McGriff, James E., 4,211,389, Cl. 24-269.000.
Timko, Joseph M., to Upjohn Company, The. Spironolactone process. 4,211,701, Cl. 260-239.570.
Tioxide Group Limited: *See*—
Massey, Frederick, 4,211,266, Cl. 150-1.000.
Tobari, Shizen; and Nakano, Mariko, to Toyo Roshi Kaisha Ltd. Test composition, method and a test stick for detection of chloride ion in cow's milk. 4,211,532, Cl. 23-231.000.
Tobitsuka, Junzo: *See*—
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,211,550, Cl. 71-89.000.
Todavchich, Zoltan-Ivan I.: *See*—
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.
Todd, Mike J.: *See*—
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Toder, Ilya A.: *See*—
Krylov, Nikolai I.; Toder, Ilya A.; Danilov, Leonid I.; and Pinsky, Gennady I., 4,211,101, Cl. 72-247.000.
Tojo, Tetsuo: *See*—
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Tokar, Joseph C.; and Janezich, Frank A., to Donaldson Company, Inc. Air cleaner with replaceable filter element. 4,211,543, Cl. 55-485.000.

Tokyo Denryoki Kabushiki Kaisha: *See*—
Andow, Fumio; Matsushima, Tetsuo; and Okamoto, Eiichi, 4,212,046, Cl. 361-80.000.
Tokyo Electric Co., Ltd.: *See*—
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Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Andow, Fumio; Matsushima, Tetsuo; and Okamoto, Eiichi, 4,212,046, Cl. 361-80.000.
Aoki, Kazuhide; and Kawagai, Kenji, 4,211,942, Cl. 307-355.000.
Kitamura, Hiroyuki; Hosokawa, Yorio; and Fukasawa, Katsumi, 4,212,056, Cl. 363-96.000.
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and Ishii, Kyoko, administrator, 4,211,118, Cl. 73-592.000.
Seki, Nagataka, 4,212,054, Cl. 363-53.000.
Tajima, Yusuke, 4,211,986, Cl. 333-116.000.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Hirasawa, Masataka; Hashimoto, Akira; and Yamazaki, Haruji, 4,212,025, Cl. 357-51.000.
Inomata, Koichiro; and Yamada, Masakazu, 4,211,585, Cl. 148-31.570.
Kohyama, Susumu, 4,211,937, Cl. 307-221.00D.
Sato, Fumitaka; Iwane, Masahiko; and Murayama, Masaki, 4,212,059, Cl. 364-200.000.
Tsuchida, Hiroaki, 4,211,902, Cl. 200-148.00R.
Tomar, Julius, to Home of Champions. Game ball. 4,211,407, Cl. 273-60.00B.
Tompkins, Russell E.: *See*—
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Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, 4,212,062, Cl. 364-414.000.
Nakaya, Chitose; Kohno, Hideki; Shiono, Hidemi; Sekihara, Kensuke; Yamamoto, Shinji; Tomura, Teruichi; and Hayakawa, Takayuki, 4,211,926, Cl. 250-445.00T.
Toomey, Gerald P.; Grove, John L.; and Fries, John R., to JLG Industries, Inc. Solar energy collector and transfer apparatus. 4,211,211, Cl. 126-439.000.
Tooyama, Akira; Ohkoshi, Akio; Tooyama, Takashi; Yukawa, Takahiro; and Hosono, Takashi, to Sony Corporation. Beam index color cathode ray tube. 4,212,030, Cl. 358-67.000.
Tooyama, Takashi: *See*—
Tooyama, Akira; Ohkoshi, Akio; Tooyama, Takashi; Yukawa, Takahiro; and Hosono, Takashi, 4,212,030, Cl. 358-67.000.
Toppan Printing Co. Ltd.: *See*—
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Toray Industries, Inc.: *See*—
Suzuki, Masaharu; Taniguchi, Takashi; and Yamagishi, Hideki, 4,211,823, Cl. 428-412.000.
Wada, Osamu; and Kusakari, Naohiko, 4,211,858, Cl. 528-272.000.
Torrington, Leslie A., to RCA Corporation. Video disc player having adjustable end-of-play switch. 4,211,421, Cl. 274-9.00B.
Tottori Sanyo Electric Co., Ltd.: *See*—
Yoshida, Nagatoshi; and Taga, Yoshihito, 4,211,909, Cl. 219-10.55R.
Tourman, Alain L.: *See*—
Legros, Francis R.; and Tourman, Alain L., 4,211,368, Cl. 239-315.000.
Towmotor Corporation: *See*—
Clason, Frank L., 4,211,314, Cl. 192-4.00A.
Toyama, Jin-Ichi; and Kawai, Masaki, to Hitachi, Ltd. Device for controlling rotational speed of electric motor. 4,211,965, Cl. 318-341.000.
Toyama, Kozo: *See*—
Koizumi, Hajime; Toyama, Kozo; Kobayashi, Mikio; Hatano, Hajime; Saeki, Toshio; Mizukoshi, Kaoru; Tamanaga, Shinichi; Miyakawa, Keizo; and Kato, Tomoyasu, 4,211,045, Cl. 52-251.000.
Toyo Roshi Kaisha Ltd.: *See*—
Tobari, Shizen; and Nakano, Mariko, 4,211,532, Cl. 23-231.000.
Toyoda-Koki Kabushiki-Kaisha: *See*—
Suzuki, Isao; Yomogida, Toshihiko; and Kato, Sadamu, 4,212,081, Cl. 364-900.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Furukawa, Haruki; Usami, Susumu; and Nakaho, Junichi, 4,211,432, Cl. 280-808.000.
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Hattori, Tadashi; Sawada, Daisaku; Goto, Kenji; Shigematu, Takashi; Takeda, Yuji; Yamaguchi, Hiroaki; and Nishida, Minoru, 4,211,194, Cl. 123-417.000.
Nogami, Takahiro; Shimizu, Hidetoshi; Horie, Mitsuyuki; and Yaji, Yuji, 4,211,312, Cl. 188-273.000.
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.
Yasumatsu, Jun, 4,211,377, Cl. 242-107.200.
Trainer, Carl: *See*—
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Trankle, Richard A., to Roberts & Porter, Inc. Backing sheet. 4,211,808, Cl. 428-131.000.
Transco, Inc.: *See*—
Shahan, James E., 4,211,046, Cl. 52-506.000.
Travaux et Produits Routiers Societe a Responsabilite Limitee: *See*—
Dortu, Pierre, 4,212,071, Cl. 364-505.000.
Travis, Terence: *See*—
Hannigan, Noreen A.; and Travis, Terence, 4,211,483, Cl. 355-14.00R.
Trenkle, Robert W.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wilson, Richard A.; Schmitt, Frederick L.; Vock, Manfred H.; Granda, Edward J.; Vinals, Joacquin; Kiwala, Jacob; and Schreiber, William L., 4,211,242, Cl. 131-17.00R.
Trenkler, Werner, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Swingable searchlight for vehicles, especially passenger vehicles. 4,212,050, Cl. 362-65.000.
Trinkaus, Winfried: *See*—
Vogel, Roland; Nikolaus, Heinrich J.; Muller, Peter; and Trinkaus, Winfried, 4,211,768, Cl. 424-95.000.
Trio Kabushiki Kaisha: *See*—
Tsuchiya, Yoichiro; and Kyoya, Kazuhiro, 4,211,356, Cl. 229-16.00R.
Troebel, Werner, to Siemens Aktiengesellschaft. Setting mechanism with detent steps for tripping devices of electrical switch gear. 4,211,907, Cl. 200-318.000.
Troebel, Werner: *See*—
Habedank, Klaus-Dieter; and Troebel, Werner, 4,211,906, Cl. 200-330.000.
Trutzschler GmbH & Co. KG: *See*—
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TRW Inc.: *See*—
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Tscheulin, Guenther: *See*—
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Tschirner, Peter: *See*—
Grunleitner, Hans; Kogler, Georg; Kohnlein, Hans; and Tschirner, Peter, 4,211,962, Cl. 318-254.000.
Tsuchida, Hiroaki, to Tokyo Shibaura Electric Co., Ltd. Apparatus for phase switching in pumping-up power station. 4,211,902, Cl. 200-148.00R.
Tsuchiya, Yoichiro; and Kyoya, Kazuhiro, to Trio Kabushiki Kaisha. Buffered package. 4,211,356, Cl. 229-16.00R.
Tsuji, Teruji: *See*—
Narisada, Masayuki; Tsuji, Teruji; Matsumura, Hiromu; and Nagata, Wataru, 4,211,779, Cl. 424-246.000.
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Tsukada, Naoshi: *See*—
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Tsukushi, Masanori; Kashimura, Katsuichi; Koyanagi, Osamu; Yoshioka, Yoshio; and Hirasawa, Kunio, to Hitachi, Ltd. Electromagnetic puffer type gas circuit breaker. 4,211,903, Cl. 200-148.00D.
Tsuprov, Sergei A.: *See*—
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.
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Tucker, Phillip C., to Kartridg Pak Co., The. Cut-off device for chub machines. 4,211,051, Cl. 53-138.00A.
Tung, Shao E. Process for removal of sulfur dioxide from gaseous mixtures. 4,211,761, Cl. 423-539.000.
Tuovinen, Frans H.: *See*—
Honkaniemi, Matti E.; Krogerus, Helge J.; Lilja, Launo L.; Makinen, Juho K.; Relander, John H.; and Tuovinen, Frans H., 4,211,553, Cl. 75-53.000.
Turetsky, Isadore. Filter-purifier cartridge. 4,211,660, Cl. 210-315.000.
Turnbull, John C.; and Yoder, Benjamin F., to RCA Corporation. Method for making an indirectly-heated cathode assembly. 4,210,988, Cl. 29-25.150.
Tutella, Alfred L.: *See*—
Jamgochian, Ralph; Oley, Leonard; Stachnik, Joseph; and Tutella, Alfred L., 4,211,342, Cl. 222-129.400.
Twardy, Harald; and Lo, Roger, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Device for the thermal decomposition of liquid fuels. 4,211,072, Cl. 60-203.000.
Tyagunov, Boris I.: *See*—
Ponomarev, Jury V.; Smirnov, Alexandr S.; Tyagunov, Boris I.; Chikul, Vitaly I.; Gubergrits, Mark Y.; Marguste, Mart A.; Efimov, Viktor M.; Petukhov, Evgeny F.; Ulanen, Yalmar S.; and Chikul, Olga S., 4,211,606, Cl. 201-12.000.
Tyree, Lewis, Jr. Systems for supplying tanks with cryogen. 4,211,085, Cl. 62-48.000.
Uchida, Kuniharu: *See*—
Sakurai, Yoshishige; Yamada, Hiroshi; Uchida, Kuniharu; Suzuki, Kanekichi; Ishii, Ryoichi, deceased; and Ishii, Kyoko, administrator, 4,211,118, Cl. 73-592.000.
Uchida, Yasuo: *See*—
Oguchi, Masanobu; Ishikawa, Hidehiko; Okuyama, Haruyoshi; Uchida, Yasuo; and Izawa, Kiyoshi, 4,211,558, Cl. 430-359.000.

Ueno, Takahiro. Method for driving a vehicle driven by an internal combustion engine. 4,211,083, Cl. 60-626.000.
Uetani, Hirofumi: *See*—
Kanetou, Yuuji; and Uetani, Hirofumi, 4,211,921, Cl. 250-202.000.
Ueyama, Takehiko; Nishizawa, Masahiro; Odaka, Yoshiyuki; and Matsuda, Hiromi, to Hitachi, Ltd. Light exposing prism system for use in forming phosphor plane of color picture tube. 4,211,477, Cl. 354-1.000.
Ugon, Michel, to Compagnie Internationale pour l'Informatique. Portable data carrier including a microprocessor. 4,211,919, Cl. 235-487.000.
Uhlig, Helmut: *See*—
Grampp, Ekkehard; Schmitt, Reinhold; and Uhlig, Helmut, 4,211,799, Cl. 426-50.000.
Ulanen, Yalmar S.: *See*—
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Ullmann, Gerhard: *See*—
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Union Carbide Corporation: *See*—
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Grose, Robert W.; and Flanigen, Edith M., 4,211,760, Cl. 423-328.000.
Lustig, Stanley; and Vasudevan, Ganapathy, 4,211,596, Cl. 156-244.120.
Story, Albert G., 4,210,981, Cl. 17-45.000.
Walker, Wellington E.; Bryant, David R.; and Brown, Earle S., Jr., 4,211,719, Cl. 260-449.00L.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Shanks, Ian A., 4,211,473, Cl. 350-337.000.
U.S. Industries, Inc.: *See*—
Snyder, David E., 4,211,250, Cl. 137-514.000.
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Army: *See*—
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Morrison, Clyde A.; Karayianis, Nick; and Wortman, Donald E., 4,211,487, Cl. 356-336.000.
Ng, Wahling H.; and Zaycer, Andrew, 4,211,124, Cl. 73-345.000.
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Kortier, William E.; Mueller, John J.; and Eggers, Philip E., 4,211,889, Cl. 136-237.000.
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National Aeronautics and Space Administration: *See*—
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Navy: *See*—
Boss, Raymond E., 4,211,148, Cl. 91-499.000.
Clark, Ronald L.; and Kreeger, John L., 4,211,999, Cl. 340-347.0AD.
Poole, Lynn A., 4,212,084, Cl. 367-118.000.
Tausig, Wayne R., 4,211,502, Cl. 403-324.000.
U.S. Philips Corporation: *See*—
Barten, Piet G. J.; and Bijma, Jan, 4,211,960, Cl. 315-368.000.
Hendriks, Johannes H., 4,211,993, Cl. 336-131.000.
Sakai, Koichi; and Ikeyama, Kazunori, 4,211,157, Cl. 99-306.000.
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United Technologies Corporation: *See*—
Games, John E.; Rosien, Richard E.; and Bitterli, William W., 4,212,078, Cl. 364-900.000.
Wallischeck, Karl H., 4,211,151, Cl. 92-146.000.
University of Utah: *See*—
Raemer, Daniel B.; Gehmlich, Dietrich K.; Westenskow, Dwayne R.; and Johnson, Curtis C., deceased, 4,211,239, Cl. 128-716.000.
Uozumi, Junzo: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,211,201, Cl. 12-463.000.
Upjohn Company, The: *See*—
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Bundy, Gordon L., 4,211,706, Cl. 260-326.270.
Sih, John C., 4,211,879, Cl. 560-53.000.
Smith, Herman W., 4,211,713, Cl. 260-346.730.
Smith, Herman W., 4,211,714, Cl. 260-346.730.
Smith, Herman W., 4,211,884, Cl. 568-807.000.
Timko, Joseph M., 4,211,701, Cl. 260-239.570.
Voorhees, John J., 4,211,770, Cl. 424-180.000.
Usami, Susumu: *See*—
Furukawa, Haruki; Usami, Susumu; and Nakaho, Junichi, 4,211,432, Cl. 280-808.000.
Usbeck, Gerhard, to Hoechst Aktiengesellschaft. Process for anodically oxidizing aluminum and use of the material so prepared as a printing plate support. 4,211,619, Cl. 204-33.000.
USM Corporation: *See*—
Cleversey, Gerald W.; Duncan, Robert J.; Medidge, George H., Jr.; and Fleming, Jean A., 4,212,075, Cl. 364-580.000.
Utz, Diether: *See*—
Schmitt, Alfons; Utz, Diether; and Schafer, Klaus, 4,212,031, Cl. 358-101.000.
Vaerewyck, Eugene G.; Miller, Robert C.; and Anderson, Arthur E., to Westinghouse Electric Corp. Heliostat guidance. 4,211,922, Cl. 250-203.00R.
Vaillancour, Mary C.; and Miller, Bruce L., to Vaillancour, Mary C. Frequency activated direction indicator. 4,212,085, Cl. 367-124.000.
Vale, Wylie W., Jr.: *See*—
Rivier, Jean E. F.; Brown, Marvin R.; and Vale, Wylie W., Jr., 4,211,693, Cl. 260-112.50S.
Valeron Corporation, The: *See*—
Hopkins, David A., 4,211,510, Cl. 408-186.000.
Valgin, Vasily D.; Vasilenko, Alexandr M.; Morozov, Anatoly Y.; and Chesnokov, Vadim D. Process for producing acid agent from sulfonated phenol and formaldehyde. 4,211,856, Cl. 528-141.000.
Vandenberg, Edwin J., to Hercules Incorporated. Titanium trichloride catalyst component for propylene polymerization. 4,211,670, Cl. 252-429.00B.
van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Soil cultivating implements. 4,211,283, Cl. 172-59.000.
van der Lely, Cornelis. Agricultural implements. 4,211,175, Cl. 111-6.000.
van der Wal, Auke, to Vereenigde Metaalverpakking en Hecktdraad Industrie B.V. MVM-ENDRA. Method and a device for applying an enlacing tape around an object. 4,211,349, Cl. 226-171.000.
Vandevier, Joseph E.; and Hocutt, Larry E., to Borg-Warner Corporation. Impressed current cathodic protection system for submersible downhole pumping assembly. 4,211,625, Cl. 204-197.000.
Vane, John R.; and Moncada, Salvador. Pharmaceutical combination. 4,211,782, Cl. 424-263.000.
Van Hecke, Michel C. F.; and Deweck, Jean, to Metallurgie Hoboken-Overpelt. Process for the production of a tantalum and niobium bearing concentrate from a tantalum and niobium bearing ferro-alloy. 4,211,754, Cl. 423-62.000.
Van Schoote, Jacques F.: *See*—
Gravisse, Philippe E.; and Van Schoote, Jacques F., 4,211,813, Cl. 428-263.000.
Vapor Energy, Inc.: *See*—
Wyatt, William G., 4,211,071, Cl. 60-39.550.
Varga, Julianna K.: *See*—
McCorsley, Clarence C., III; and Varga, Julianna K., 4,211,574, Cl. 106-163.00R.
Vasilenko, Alexandr M.: *See*—
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Steudten, Friedrich; and Koppl, Franz, 4,211,040, Cl. 51-42.000.

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Szakasits, Julius J.; and Wadham, Thomas C., 4,211,340, Cl. 222-3.000.

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Walters, Robert W.; and Nylander, James, to Container Equipment Corporation. Carton erecting apparatus. 4,211,153, Cl. 93-53.0SD.

Ward, Eldon L.: *See*—
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Ward, George C., to Southwire Company. Continuous casting mold geometry improvement. 4,211,271, Cl. 164-87.000.

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Watabe, Yoji; Fujii, Yoshihiko; Anzai, Shiro; and Furukawa, Junji, to Bridgestone Tire Company Limited. Process for reclaiming scrap vulcanized rubber. 4,211,676, Cl. 260-2.300.

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Weavers, Mark W.; and Konkler, Anthony W., to Minnesota Mining and Manufacturing Company. Multiple-point hinge for double-wall plastic box. 4,211,337, Cl. 220-341.000.

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Hoffman, Charles A.; Weeton, John W.; and Orth, Norman W., 4,211,354, Cl. 228-118.000.

Wehde, Friedrich, to Erwin Kampf GmbH & Co. Maschinenfabrik, Firma. Cutting width modifying means for a longitudinal web cutting machine. 4,211,135, Cl. 83-499.000.

Weimann, Norbert: *See*—
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Weissler, Harold E., II: *See*—
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Welch Foods Inc.: *See*—
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Wescott, Ronald O., to Industrial Electronic Hardware Corp. Axially mating cable connector. 4,211,461, Cl. 339-91.00R.

Westbrook, Clifton W.; Parcell, Lloyd J.; Claytor, Gary L.; and Klock, Byron V., to Texaco Inc. Waste water process. 4,211,646, Cl. 210-15.000.

Westek Corporation: *See*—
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Westenskow, Dwayne R.: *See—*
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Westerberg, Hakan: *See—*
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Western Electric Company, Incorporated: *See—*
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McGonigal, Charles; and Voytko, James E., 4,211,099, Cl. 72-47.000.
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Western Geophysical Co. of America: *See—*
Miller, Adrian D., 4,211,300, Cl. 181-120.000.
Westinghouse Electric Corp.: *See—*
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Vaerewyck, Eugene G.; Miller, Robert C.; and Anderson, Arthur E., 4,211,922, Cl. 250-203.00R.
Weston, Robert M. Adjustable rack assembly. 4,211,448, Cl. 296-3.000.
Wetzig, Lloyd M.: *See—*
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Weyl, Helmut: *See—*
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Long, Marshall; Alley, Lewis F.; and White, James E., 4,211,055, Cl. 53-517.000.
White, William G.; and Johnson, Verle D., to Bunker Ramo Corporation. Contact loading apparatus. 4,211,001, Cl. 29-747.000.
White, William I.: *See—*
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Whitehead, Charles W., Wilma W. Johnson, personal representatives: *See—*
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Williams, Curtis. Tilt release catch. 4,210,986, Cl. 24-230.0TC.
Williams, Danny L.: *See—*
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Williams, Frederick P.: *See—*
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Williams, Shane. Smoking device. 4,211,244, Cl. 131-194.000.
Williamson, Michael, to Owens-Corning Fiberglas Corporation. Electrical furnace, zones balanced with a symmetrically tapped transformer. 4,211,887, Cl. 13-6.000.
Williamson, Robert D. Method and apparatus for selective electronic surveillance. 4,212,002, Cl. 340-572.000.
Wilson, Clive J., to Midland-Ross Corporation. Lining for grinding mills. 4,211,370, Cl. 241-183.000.
Wilson Greatbatch Ltd.: *See—*
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Winkelmann, Hans D.; Wolf, Karlheinz; Oertel, Harald; and Weimann, Norbert, to Bayer Aktiengesellschaft. Isocyanate adduct diols. 4,211,699, Cl. 260-239.30R.
Winslow, Richard N.: *See—*
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Wisbey, Jerry D.; and Stone, Kirby L., to Cincinnati Milacron Inc. Slide valve. 4,211,255, Cl. 137-625.480.
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Witten, John E.; Wood, Loren E.; and Short, Edward H., III, to B S & B Safety Systems, Inc. Safety pressure relief apparatus. 4,211,334, Cl. 220-89.00A.
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Wolber, William G., to Bendix Corporation, The. Self-standardizing pressure sensor for use in an electronic fuel control system. 4,211,119, Cl. 73-721.000.
Wolf, Karlheinz: *See—*
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Wolfthal, Maurice, to Stewart Stamping Corporation, a division of Insilco Corp. Electrical connector for termination cords with improved locking means. 4,211,462, Cl. 339-103.00M.
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Woods, Donald M., to Emerson Electric Co. String-type weed cutter with mechanical line feed. 4,211,004, Cl. 30-276.000.
Woods, Donald M., to Emerson Electric Co. Apparatus for cutting vegetation. 4,211,005, Cl. 30-276.000.
Woods, Ivan D. Soap bar holder. 4,211,445, Cl. 294-25.000.
Woodward, David W.: *See—*
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Wortman, Donald E.: *See—*
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Wright, Glenn L., to Youngstown Steel Door Company, The. Roller drop door. 4,211,038, Cl. 49-234.000.
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WSW Stahl- und Wasserbau GmbH: *See—*
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Yamada, Koichiro, to Hitachi, Ltd. Exhaust bypassing system for a turbocharger. 4,211,081, Cl. 60-602.000.
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Yamashiro, Osamu, to Hitachi, Ltd. Crystal oscillator using a class B complementary MIS amplifier. 4,211,985, Cl. 331-116.0FE.

Yamazaki, Haruji: *See*—
Hirasawa, Masataka; Hashimoto, Akira; and Yamazaki, Haruji, 4,212,025, Cl. 357-51.000.

Yamazaki, Iwao: *See*—
Okada, Hiroaki; Yamazaki, Iwao; and Yashiki, Takatsuka, 4,211,769, Cl. 424-177.000.

Yamazaki, Masami: *See*—
Muraoka, Teruo; Yamazaki, Masami; and Ishigaki, Yukinobu, 4,211,979, Cl. 455-306.000.

Yamazaki, Yasuhiro: *See*—
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,035, Cl. 358-260.000.
Nakagome, Yukio; Teramura, Hiroichi; Yamazaki, Yasuhiro; and Wakahara, Yasushi, 4,212,036, Cl. 358-261.000.

Yamazaki, Yoshio: *See*—
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,211,550, Cl. 71-89.000.

Yan, Tsoung-Yuan, to Mobil Oil Corporation. Pitch and asphalt compositions. 4,211,576, Cl. 106-278.000.

Yanagi, Hirobumi: *See*—
Ikeno, Hitoshi; Konno, Tetsuro; Sugita, Mitsuyuki; and Yanagi, Hirobumi, 4,211,947, Cl. 310-312.000.

Yanaka, Shigenobu: *See*—
Kohno, Hideki; Shiono, Hidemi; Nakaya, Chitose; Sekihara, Kensuke; Tomura, Teruichi; Yamamoto, Shinji; Hayakawa, Takayuki; Horiba, Isao; and Yanaka, Shigenobu, 4,212,062, Cl. 364-414.000.

Yang, Kwang-Tzu: *See*—
Martin, William J.; and Yang, Kwang-Tzu, 4,211,174, Cl. 110-263.000.

Yariv, Amnon; Margalit, Shlomo; and Lee, Chien-Ping, to California Institute of Technology. Solid state electro-optical devices on a semi-insulating substrate. 4,212,020, Cl. 357-17.000.

Yarmukhametov, Azat U.: *See*—
Baxansky, Mark I.; Gusev, Valery F.; Krengel, Genrikh I.; Mikhailov, Viktor P.; Kuramshin, Ravil S.; Sorokin, German P.; and Yarmukhametov, Azat U., 4,211,916, Cl. 371-15.000.

Yashiki, Takatsuka: *See*—
Okada, Hiroaki; Yamazaki, Iwao; and Yashiki, Takatsuka, 4,211,769, Cl. 424-177.000.

Yasuda, Shigeo: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; and Iwasaki, Motoaki, 4,211,901, Cl. 200-83.00B.

Yasumatsu, Jun, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki Seisakusho. Locking device for a seatbelt system. 4,211,377, Cl. 242-107.200.

Yaun-Williams Bucket Co., The: *See*—
Pezzini, Mario; and Myers, Elmer P., 4,211,252, Cl. 137-580.000.

Yautz, Michael J., Jr.; and Winslow, Richard N., to Harris Corporation. Apparatus for combining sheet material assemblages. 4,211,320, Cl. 198-450.000.

Yazawa, Masahide; and Kurihara, Kazuhiko, to Polymer Processing Research Institute Ltd.; and Sekisui Kagaku Kogyo Kabushiki Kaisha. Reinforced non-woven fabrics and method of making same. 4,211,807, Cl. 428-109.000.

Yazev, Mikhail V.: *See*—
Kaluzhsky, Nikolai A.; Kil, Ilya G.; Nikiforov, Vladimir P.; Nosikov, Vasily I.; Smorodinov, Alexandr N.; Yazev, Mikhail V.; and Tsybukov, Igor K., 4,211,626, Cl. 204-243.00M.

Yeates, Robert D. Downhole surge tools, method and apparatus. 4,211,280, Cl. 166-311.000.

Yocum, William C.; and Hughes, David E., to Superior Valve Company. Slow opening cylinder valve. 4,211,386, Cl. 251-122.000.

Yoder, Benjamin F.: *See*—
Turnbull, John C.; and Yoder, Benjamin F., 4,210,988, Cl. 29-25.150.

Yokono, Hitoshi: *See*—
Nishikawa, Akio; Katagiri, Junichi; Kinjo, Noriyuki; Yokono, Hitoshi; Ikeda, Tamotsu; and Kobayashi, Tsuguo, 4,211,686, Cl. 260-40.00R.

Yokozeki, Kenzo: *See*—
Nakamori, Shigeru; Yokozeki, Kenzo; Mitsugi, Koji; Eguchi, Chikahiko; and Iwagami, Hisao, 4,211,840, Cl. 435-107.000.

Yomogida, Toshihiko: *See*—
Suzuki, Isao; Yomogida, Toshihiko; and Kato, Sadamu, 4,212,081, Cl. 364-900.000.

Yonemoto, Tomoo: *See*—
Kitai, Kiyoshi; Kobayashi, Masaru; Yonemoto, Tomoo; and Kato, Shogo, 4,211,480, Cl. 354-234.000.

Yoneyama, Masakazu; Mukunoki, Yasuo; Mikami, Takeshi; and Sasaki, Jun, to Fuji Photo Film Co., Ltd. Method for dispersing oil-soluble photographic additives. 4,211,836, Cl. 430-449.000.

Yoshida, Masashi; and Iino, Yasuo, to Hitachi, Ltd. Tape recorder with single control activating member. 4,212,040, Cl. 360-96.300.

Yoshida, Nagatoshi; and Taga, Yoshihito, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. Combination microwave and gas oven. 4,211,909, Cl. 219-10.55R.

Yoshida, Satomi: *See*—
Kunimune, Kohichi; Inadomi, Seigo; and Yoshida, Satomi, 4,211,819, Cl. 428-374.000.

Yoshida, Shinichi, to Honny Chemicals Company, Ltd. Bonding rubber to metal. 4,211,824, Cl. 428-462.000.

Yoshihara, Masao: *See*—
Yamada, Koichi; Yoshihara, Masao; Ishida, Takahiro; and Sato, Kazuo, 4,211,667, Cl. 252-313.00R.

Yoshino, Tadashi: *See*—
Yabu, Toshiomi; Wada, Tatsuo; Yamada, Kouichi; and Yoshino, Tadashi, 4,211,964, Cl. 318-314.000.

Yoshioka, Yoshio: *See*—
Tsukushi, Masanori; Kashimura, Katsuichi; Koyanagi, Osamu; Yoshioka, Yoshio; and Hirasawa, Kunio, 4,211,903, Cl. 200-148.00D.

Yoshitake, Katsumi: *See*—
Taguchi, Tadashi; Fujikawa, Noboru; Kohno, Mitsuo; Yoshitake, Katsumi; and Satake, Kunio, 4,211,560, Cl. 430-313.000.

Yoshizawa, Ryo: *See*—
Ohtake, Nobumasa; Yoshizawa, Ryo; and Koga, Isao, 4,211,704, Cl. 260-319.100.

Young, Archie R., II: *See*—
Muenker, Adolf H.; and Young, Archie R., II, 4,211,210, Cl. 126-438.000.

Young, David A.; and Kimball, Bruce S., to Hoover Universal, Inc. Trailer hitch. 4,211,427, Cl. 280-406.00A.

Young, Philip J.: *See*—
Poole, Brian; and Young, Philip J., 4,211,390, Cl. 266-207.000.

Youngquist, Rudolph W., to Procter & Gamble Company, The. Deflavoring vegetable seed materials. 4,211,694, Cl. 260-123.500.

Youngstown Steel Door Company, The: *See*—
Wright, Glenn L., 4,211,038, Cl. 49-234.000.

Yu, Albert P.: *See*—
Bertolacini, Ralph J.; and Yu, Albert P., 4,211,634, Cl. 208-59.000.

Yukawa, Takahiro: *See*—
Tooyama, Akira; Ohkoshi, Akio; Tooyama, Takashi; Yukawa, Takahiro; and Hosono, Takashi, 4,212,030, Cl. 358-67.000.

Zaffagnini, Deoscaride: *See*—
Di Drusco, Giovanni; and Zaffagnini, Deoscaride, 4,211,737, Cl. 264-12.000.

Zahner, Hans: *See*—
Scheer, Martin; Anke, Heidrun; Konig, Wilfried; and Zahner, Hans, 4,211,787, Cl. 424-279.000.

Zajic, James E.; Hill, Martha A.; Manchester, Donald F.; and Muzika, Karel, to Abitibi Paper Company Ltd. Foam flotation activated sludge process. 4,211,645, Cl. 210-7.000.

Zankl, Frank, to Kearney & Trecker Corporation. Rotary table with ballscrew drive. 4,211,512, Cl. 409-221.000.

Zapomel, Janos. Fork accessory for winding spaghetti. 4,211,372, Cl. 242-1.000.

Zawodny, Arthur, to Keystone Camera Corporation. Film advance mechanism. 4,211,479, Cl. 354-213.000.

Zaycer, Andrew: *See*—
Ng, Wahling H.; and Zaycer, Andrew, 4,211,124, Cl. 73-345.000.

Zechlin, Richard, to Colt Industries Operating Corp. Overspeed ignition system. 4,211,195, Cl. 123-335.000.

Zelter, Zelmen: *See*—
Leroy, Francoise A. J.; Zelter, Zelmen; Francois, Andre' C.; Chassin, Andre' ; and Rodeaud, Jacques, 4,211,795, Cl. 426-2.000.

Zerostat Components Limited: *See*—
Rangabe, Alexander R., 4,211,422, Cl. 274-23.00R.

Zilka, Thomas J. Nailing machine. 4,211,352, Cl. 227-130.000.

Zimmermann, Jurgen. Apparatus for making a coffee beverage. 4,211,156, Cl. 99-287.000.

Zinkovsky, Ivan V.: *See*—
Semkina, Novella V.; Bokach, Galina S.; and Zinkovsky, Ivan V., 4,211,624, Cl. 204-195.00S.

Ziolkowski, Ronald P.: *See*—
Pulver, W. Clark; Euverard, Maynard R.; Heide, Henry A.; and Ziolkowski, Ronald P., 4,211,319, Cl. 198-432.000.

Zirconal Processes Limited: *See*—
Emblem, Harold G.; Das, Anup K.; and Jones, Kenneth, 4,211,717, Cl. 556-470.000.

Zubilin, Ivan G.: *See*—
Privalov, Vasily E.; Zubilin, Ivan G.; Todavchich, Zoltan-Ivan I.; Kulakov, Nikolai K.; Silka, Adolf N.; Minasov, Alexandr N.; Ananievsky, Mikhail G.; Temkin, Naum E.; and Solodkov, Vyacheslav I., 4,211,607, Cl. 201-39.000.

Zvezdunov, Dmitry A.: *See*—
Popov, Alexandr D.; Solomin, Vladimir A.; and Zvezdunov, Dmitry A., 4,211,943, Cl. 310-13.000.

Zybalova, Galina P.: *See*—
Chukhanov, Zinovy F.; Nikolaev, Anatoly M.; Karasev, Vadim A.; Shapatina, Elizaveta A.; Chukhanov, Zinovy Z.; Zybalova, Galina P.; Fedorov, Nikolai A.; and Tsuprov, Sergei A., 4,211,632, Cl. 208-8.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allied Chemical Corporation: *See*—
Damon, William H., Re. 30,327, Cl. 280-740.000.

Aluminum Company of America: *See*—
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., Re. 30,330, Cl. 204-67.000.

Bernstein, David H.: *See*—
Sorensen, Karsten; Bernstein, David H.; and Druke, Michael B., Re. 30,331, Cl. 364-200.000.

Cochran, C. Norman: *See*—
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., Re. 30,330, Cl. 204-67.000.

Compressor Controls Corp.: *See*—
Rutshtein, Alexander; and Staroselsky, Naum, Re. 30,329, Cl. 415-1.000.

Damon, William H., to Allied Chemical Corporation. Inflator seal. Re. 30,327, Cl. 280-740.000.

Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., to Aluminum Company of America. Aluminum purification. Re. 30,330, Cl. 204-67.000.

Data General Corporation: *See*—
Sorensen, Karsten; Bernstein, David H.; and Druke, Michael B., Re. 30,331, Cl. 364-200.000.

Druke, Michael B.: *See*—
Sorensen, Karsten; Bernstein, David H.; and Druke, Michael B., Re. 30,331, Cl. 364-200.000.

Hill, Walter W.: *See*—
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., Re. 30,330, Cl. 204-67.000.

Hoague-Sprague Leasing Company, Inc.: *See*—
Waldbauer, Wilhelm, deceased, Re. 30,325, Cl. 93-51.00M.

Huss, Heinrich. Apparatus for developing a travelling photographic emulsion carrier. Re. 30,328, Cl. 354-322.000.

Mazgaj, Robert M.: *See*—
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., Re. 30,330, Cl. 204-67.000.

Milito, Richard A.: *See*—
Das, Subodh K.; Cochran, C. Norman; Milito, Richard A.; Mazgaj, Robert M.; and Hill, Walter W., Re. 30,330, Cl. 204-67.000.

Rutshtein, Alexander; and Staroselsky, Naum, to Compressor Controls Corp. Method and apparatus for antisurge protection of a dynamic compressor. Re. 30,329, Cl. 415-1.000.

Sem-Torq, Inc.: *See*—
Seme, Joseph P., Re. 30,324, Cl. 40-595.000.

Seme, Joseph P., to Sem-Torq, Inc. Letter and number kits and the process of preparing same. Re. 30,324, Cl. 40-595.000.

Sorensen, Karsten; Bernstein, David H.; and Druke, Michael B., to Data General Corporation. Data processing system having a unique CPU and memory timing relationship and data path configuration. Re. 30,331, Cl. 364-200.000.

Staroselsky, Naum: *See*—
Rutshtein, Alexander; and Staroselsky, Naum, Re. 30,329, Cl. 415-1.000.

TRW Inc.: *See*—
van Buren, Harold S., Jr., Re. 30,326, Cl. 220-326.000.

van Buren, Harold S., Jr., to TRW Inc. Panel hole closure. Re. 30,326, Cl. 220-326.000.

Waldbauer, Wilhelm, deceased, to Hoague-Sprague Leasing Company, Inc. Method and apparatus for producing glued folded boxes. Re. 30,325, Cl. 93-51.00M.

LIST OF PLANT PATENTEES

Chattem, Inc.: *See*—
Jolly, Nelson F., 4,564, Cl. 10.000.

Farrell, William R. Variety of tropical apricot shrub. 4,565, 7-8-80, Cl. 33.000.

Fischer, Arnold W., to Pan-American Plant Company. African violet named Julia. 4,569, 7-8-80, Cl. 69.000.

Hope, Claude, to Pan-American Plant Company. Kalanchoe named Princess. 4,567, 7-8-80, Cl. 68.000.

Hope, Claude, to Pan-American Plant Company. Kalanchoe named Conquistador. 4,568, 7-8-80, Cl. 68.000.

Jolly, Nelson F., to Chattem, Inc. Rose plant. 4,564, 7-8-80, Cl. 10.000.

Pan-American Plant Company: *See*—
Fischer, Arnold W., 4,569, Cl. 69.000.
Hope, Claude, 4,567, Cl. 68.000.
Hope, Claude, 4,568, Cl. 68.000.

Surabian, Aaron, to Surabian Bros. Nectarine tree. 4,566, 7-8-80, Cl. 41.000.

Surabian Bros.: *See*—
Surabian, Aaron, 4,566, Cl. 41.000.

LIST OF DESIGN PATENTEES

Agrowplow Pty Limited: *See*—
Ryan, John W., 255,797, Cl. D15-11.000.

Albert, Lawrence D., to Altray Company, Inc. Candy package. 255,778, 7-8-80, Cl. D9-193.000.

Almquist, Lennart: *See*—
Kallstrom, Yngve, 255,752, Cl. D7-71.000.

Altray Company, Inc.: *See*—
Albert, Lawrence D., 255,778, Cl. D9-193.000.

Ammondson, Clayton J.: *See*—
Lee, Norman; and Ammondson, Clayton J., 255,762, Cl. D7-194.000.

Asamoto, Kazumasa, to Shindaiwa Kogyo Co., Ltd. Chain saw. 255,770, 7-8-80, Cl. D8-65.000.

Barber, William L. Golf club head. 255,818, 7-8-80, Cl. D21-219.000.

Baron, John D. Protector. 255,728, 7-8-80, Cl. D2-27.000.

Benjamin, E. Burton, to Mosinee Paper Corporation. Towel dispensing cabinet. 255,733, 7-8-80, Cl. D6-96.000.

Bennett, R. Brian P.: *See*—
Crooks, Basil D.; and Bennett, R. Brian P., 255,765, Cl. D8-30.000.

Bentsen, Lon C. Foot massager or similar article. 255,835, 7-8-80, Cl. D24-36.000.

Bishton, Paul I., to Strada Jewellery Limited. Pendant. 255,785, 7-8-80, Cl. D11-43.000.

Bluestein, Bernard B.: *See*—
Steinkamp, Norman A.; and Bluestein, Bernard B., 255,758, Cl. D7-153.000.

Bogner, Paul. Hamper cover. 255,761, 7-8-80, Cl. D7-163.000.

Borden, Thomas W.; Hulst, Richard A.; and Yaeger, Gary M. Dual ski structure for water skiing and snow sledding. 255,820, 7-8-80, Cl. D21-229.000.

Bosch-Siemens Hausgerate GmbH: *See*—
Feil, Rolf, 255,757, Cl. D7-153.000.
Reichl, Ernst, 255,832, Cl. D23-148.000.

Bowers, Michael C. Jet cargo aircraft. 255,789, 7-8-80, Cl. D12-71.000.

Braden, Denver, to Illinois Tool Works Inc. Insertion tool for inserting two-leaded electrical capacitors, and the like, into printed circuit boards. 255,769, 7-8-80, Cl. D8-51.000.

Braun Aktiengesellschaft: *See*—
Rams, Dieter, 255,794, Cl. D14-34.000.

Bretschger, Edward B., to Louis Marx & Co., Inc. Riding toy. 255,809, 7-8-80, Cl. D21-74.000.
Bretschger, Edward B., to Louis Marx & Co., Inc. Riding toy. 255,810, 7-8-80, Cl. D21-137.000.
Britt, William J., to Morton-Norwich Products, Inc. Bottle. 255,776, 7-8-80, Cl. D9-60.000.
Butler, Frederick A.; and Croonenberg, William, to Thetford Corporation. Toilet. 255,828, 7-8-80, Cl. D23-48.000.
Canavan, Richard W., III. Pair of spectacles. 255,802, 7-8-80, Cl. D16-65.000.
Cardinal American Corporation: *See*—
Gale, Allen W., 255,735, Cl. D6-144.000.
Champion International Corporation: *See*—
Roccaforte, Harry I., 255,781, Cl. D9-245.000.
Christensen, Earl. Lapidary machine. 255,799, 7-8-80, Cl. D15-125.000.
Clatterbuek, Richard T., to Goodyear Tire & Rubber Company, The. Dispensing box for sheet material. 255,779, 7-8-80, Cl. D9-224.000.
Clemens, Anton H., to Miles Laboratories, Inc. Packaging container. 255,775, 7-8-80, Cl. D9-18.000.
Cooper Industries Inc.: *See*—
Ferguson, William C., 255,763, Cl. D8-5.000.
Corning Glass Works: *See*—
Luzier, Patricia A., 255,748, Cl. D7-39.000.
Luzier, Patricia A., 255,749, Cl. D7-39.000.
Rothstein, Estelle G., 255,750, Cl. D7-39.000.
Cox, Zula B. Stuffed toy horse with hat. 255,812, 7-8-80, Cl. D21-165.000.
Crandall, Norman C., to Shiley Incorporated. Infant oxygen hood. 255,833, 7-8-80, Cl. D24-1.100.
Crooks, Basil D.; and Bennett, R. Brian P., to Northern Telecom Limited. Manual welding implement. 255,765, 7-8-80, Cl. D8-30.000.
Croonenberg, William: *See*—
Butler, Frederick A.; and Croonenberg, William, 255,828, Cl. D23-48.000.
Cruz, Maria I. Glue gun holder. 255,771, 7-8-80, Cl. D8-71.000.
Daenen, Robert H. C. M., to Dart Industries Inc. Colander. 255,751, 7-8-80, Cl. D7-47.000.
Dart Industries Inc.: *See*—
Daenen, Robert H. C. M., 255,751, Cl. D7-47.000.
Deguchi, Chuuji; and Nakauchi, Sinosuke, to Olympic Fishing Tackle Co., Ltd. Fishing reel. 255,823, 7-8-80, Cl. D22-25.000.
Dekko, Chester E. Mat section. 255,744, 7-8-80, Cl. D6-209.000.
Dexter Corporation, The: *See*—
Wieland, Howard N., Jr., 255,766, Cl. D8-30.000.
Dock, Morris L.: *See*—
Galloway, David L.; Dock, Morris L.; Grundy, James K.; and Woodworth, Robert D., 255,755, Cl. D7-77.000.
Dulude, Charles R. Gun target. 255,822, 7-8-80, Cl. D22-15.000.
Dybala, Raymond W., to Sunbeam Corporation. Egg cooker. 255,756, 7-8-80, Cl. D7-94.000.
Emanuel, Peter R., to International Telephone and Telegraph Corporation. Plastic storm door. 255,838, 7-8-80, Cl. D25-48.000.
Emerson Electric Co.: *See*—
Lombard, Marco H., 255,764, Cl. D8-08.000.
Ernest, Robert O., to Sunbeam Corporation. Power unit for a blender or the like. 255,759, 7-8-80, Cl. D7-154.000.
Ernest, Robert O.; Thomas, Richard K.; and Guth, Gordon T., to Sunbeam Corporation. Mixer. 255,760, 7-8-80, Cl. D7-158.000.
Ettinger, Donald H., to USM Corporation. Welding gun. 255,767, 7-8-80, Cl. D8-30.000.
Faunce, Carol A. Receptacle for storing a yogurt container. 255,754, 7-8-80, Cl. D7-77.000.
Feil, Rolf, to Bosch-Siemens Hausgerate GmbH. Kitchen appliance motor. 255,757, 7-8-80, Cl. D7-153.000.
Ferguson, William C., to Cooper Industries Inc. Clippers. 255,763, 7-8-80, Cl. D8-5.000.
Flowers, Inc.: *See*—
Morehead, Coatus L., Jr., 255,787, Cl. D11-155.000.
Forest, Lawrence J., to GTE Products Corporation. Tie strap. 255,782, 7-8-80, Cl. D9-252.000.
Gale, Allen W., to Cardinal American Corporation. Bar. 255,735, 7-8-80, Cl. D6-144.000.
Galloway, David L.; Dock, Morris L.; Grundy, James K.; and Woodworth, Robert D., to Leisure Foam Products, Inc. Insulated carrier for beverage cans or the like. 255,755, 7-8-80, Cl. D7-77.000.
Gayeski, Frank. Station. 255,737, 7-8-80, Cl. D6-161.000.
Goodyear Tire & Rubber Company, The: *See*—
Clatterbuck, Richard T., 255,779, Cl. D9-224.000.
Goransson, Jan. Golf putting target. 255,821, 7-8-80, Cl. D21-234.000.
Grundy, James K.: *See*—
Galloway, David L.; Dock, Morris L.; Grundy, James K.; and Woodworth, Robert D., 255,755, Cl. D7-77.000.
GTE Products Corporation: *See*—
Forest, Lawrence J., 255,782, Cl. D9-252.000.
Gustafson, Thomas A. Ski sled. 255,788, 7-8-80, Cl. D12-9.000.
Guth, Gordon T.: *See*—
Ernest, Robert O.; Thomas, Richard K.; and Guth, Gordon T., 255,760, Cl. D7-158.000.
Gutner, Kenneth H. Bed canopy frame side rail. 255,742, 7-8-80, Cl. D6-198.000.
Hallerman, Edith O. Exerciser. 255,815, 7-8-80, Cl. D21-198.000.
Hampshire, James F.; Terek, Greg P.; and Sankovich, Richard C., to Rubbermaid Commercial Products Inc. Hinged top card file. 255,805, 7-8-80, Cl. D19-76.000.
Hansen, Homer P. Fireplace heater. 255,830, 7-8-80, Cl. D23-95.000.
Hardy, Charles T., to Safe-T-Lawn, Inc. Lawn sprinkler. 255,825, 7-8-80, Cl. D23-7.000.
Hardy, Terence: *See*—
Litchfield, Leon G.; and Hardy, Terence, 255,741, Cl. D6-191.000.
Harriman, Glenda. Bola tie. 255,729, 7-8-80, Cl. D2-352.000.
Harrison, John L. Automotive rearview mirror. 255,792, 7-8-80, Cl. D12-187.000.
Harvey, Thomas D.: *See*—
Winter, Russell K.; Savas, Nedim; Snively, Joseph H.; and Harvey, Thomas D., 255,739, Cl. D6-189.000.
Hays, Ronald B. Letter bomb detector. 255,783, 7-8-80, Cl. D10-46.000.
Hilary Page "Sensible" Toys Limited: *See*—
Pape, John A.; and Walker, Norman, 255,813, Cl. D21-166.000.
Hoffman, Paul R.; and Wallenwein, Hans K., to Plasti-Fab. Co. Ltd. Food processor tool holder. 255,753, 7-8-80, Cl. D7-74.000.
Holstine, Patricia I. Toy raccoon. 255,811, 7-8-80, Cl. D21-148.000.
Huffman, James R.: *See*—
Marshall, John F.; and Huffman, James R., 255,795, Cl. D14-45.000.
Hulst, Richard A.: *See*—
Borden, Thomas W.; Hulst, Richard A.; and Yaeger, Gary M., 255,820, Cl. D21-229.000.
Illinois Tool Works Inc.: *See*—
Braden, Denver, 255,769, Cl. D8-51.000.
Immel, Jim L.; and Stitt, Carl E. Hub pulling device. 255,768, 7-8-80, Cl. D8-51.000.
International Tapetronics Corporation: *See*—
Jenkins, John P., 255,793, Cl. D14-6.000.
International Telephone and Telegraph Corporation: *See*—
Emanuel, Peter R., 255,838, Cl. D25-48.000.
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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